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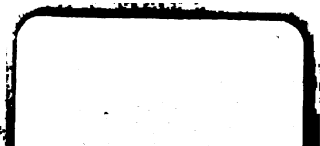
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CANADA  
ANNUAL REPORT

OF THE

MINISTER OF PUBLIC

FOR THE

Fiscal Year 1887-88.

ON THE WORKS UNDER HIS CONTROL

SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF  
SECTION 37, OF THE REVISED STATUTES OF CANADA

Printed by Order of Parliament.



OTTAWA: CONTROLLED  
PRINTED FOR THE QUEEN'S PRINTER AND CONTROLLER  
GENERAL OF PRINTING.  
1888.



CANADA. *Dept. of Public Works*

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ANNUAL REPORT

OF THE

MINISTER OF PUBLIC WORKS

FOR THE

Fiscal Year 1887-88,

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SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER THIRTY-SIX  
SECTION 37, OF THE REVISED STATUTES OF CANADA.

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OTTAWA:

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WILLIAM  
JAMES  
WATSON



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CANADA.

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REPORT

OF THE

MINISTER OF PUBLIC WORKS

FOR THE

FISCAL YEAR ENDED 30TH JUNE, 1888.

---



*To His Excellency the Right Honourable Sir Frederick Arthur Stanley, Baron Stanley of Preston, in the County of Lancaster, in the Peerage of Great Britain; Knight Grand Cross of the Most Honourable Order of the Bath; Governor General of Canada, and Vice Admiral of the same, &c.*

**MAY IT PLEASE YOUR EXCELLENCY :**

In compliance with the requirements of Chapter 36, Section 37 of the Revised Statutes of Canada, I have the honour to submit the Annual Report of the Department of Public Works for the fiscal year ended 30th June, 1888.

The Report contains a statement of the general expenditure of the Department amounting to \$3,428,943.00 the details of which will be found in Appendix 1, pages 5 to 22, followed by Appendices giving the Annual Reports of the Chief Architect, Chief Engineer, Chief Mechanical Engineer, and other officers of the Department, as well as statements containing information pertaining to the Department.

The works under the control of this Department are:—

**PUBLIC BUILDINGS**, their construction and maintenance.  
**HARBOURS AND PIERS**, their improvement and construction.  
**WORKS ON NAVIGABLE RIVERS.**  
**DREDGING AND DREDGE VESSELS.**  
**ROADS AND BRIDGES.**  
**SLIDES AND BOOMS.**  
**TELEGRAPHS.**

---

## DESCRIPTION OF WORK DONE.

---

The following is a description of the work done during the fiscal year on Public Buildings, Harbours, Rivers and Dredging, arranged in alphabetical order, by Provinces.

### PROVINCE OF NOVA SCOTIA.

---

#### AMHERST.

---

Amherst, the chief town of Cumberland County, is situated at the head of Chignecto Bay, and is 138 miles north-west of Halifax.

During the year the property on which the public building stands was fenced, storm sashes were supplied, and small necessary repairs made to the building. (Appendix 2, page 25 )

---

#### ANTIGONISH.

---

Antigonish is the county town of the County of Antigonish, and is situated on the Halifax and Cape Breton Railway, 41 miles east of New Glasgow.

Repairs were made to the public building at this place.

---

**ARICHAT.**

---

Arichat is the shire town of the County of Richmond, Cape Breton. Slight repairs were made to the public building.

---

**ARISAIG.**

---

Arisaig, in the County of Antigonish, is on the south-east shore of Northumberland Strait, 15 miles east of Merigomish, the nearest harbour.

The repairs to the pier and the construction of the breakwater were completed during the fiscal year. (Appendix 5, page 60.)

---

**BADDECK.**

---

Baddeck is the chief town of Victoria County, and is situated on the north side of the Great Bras d'Or Lake, about 40 miles from Sydney.

A coal shed, in connection with the Post Office, &c., building was erected, grading was done, and other improvements effected. (Appendix 2, page, 25).

---

**BAYFIELD.**

---

Bayfield, in Antigonish County, is on the south coast of St. George's Bay, 8 miles east from Antigonish Harbour, and 15 miles west from the entrance to the Straits of Canso.

The work of extending the breakwater was continued during the year and is about three-fifths completed, and repairs to the wharf which is situated a quarter of a mile to the south of the breakwater were effected (Appendix 5, pages 60 and 61.)

---

**BAY ST. LAWRENCE.**

---

Bay St. Lawrence, Victoria County, is at the northern extremity of Cape Breton Island, between Capes North and St. Lawrence.

The channel opened during 1886-87, and referred to in my last report as having filled up, was again opened, but with no better success, the same filling in taking place as in the previous year. (Appendix 5, page 61.)

---

**BIG BRAS D'OR.**

---

Big Bras d'Or, Victoria County, is on the south side of the channel of the same name, near its entrance to the Atlantic.

During the year the construction of a wharf 160 feet in length, with a depth of 11 feet at low tide, was begun and the work is about half finished. (Appendix 5, page 61.)

---

**BIG POND.**

---

Big Pond, Cape Breton County, is on the south side of East Bay, Big Bras d'Or Lake.

A wharf, 160 feet in length, with a depth of 8 feet at lowest lake level, is under construction at this place. (Appendix 5, page 61.)

---

**BLUE ROCK.**

---

Blue Rock, Antigonish County, is on the south coast of St. George's Bay,  $2\frac{1}{2}$  miles east from Tracadie Harbour.

On 24th November, a contract was entered into for the construction of a breakwater  $326\frac{1}{2}$  feet long, to extend in a south-westerly direction from Blue Cape, thus protecting an area of  $3\frac{1}{2}$  acres, having an extreme low water depth varying from 5 to 12 feet.

At the close of the fiscal year the contractor had only completed about one-third of the work. (Appendix 5, page 61.)

---

**BROAD COVE.**

---

Broad Cove Marsh, in Inverness County, is on the Gulf of St. Lawrence, 19 miles north of Mabou Harbour and 12 miles south from Margaree.

On 12th November, 1886, a contract was entered into for the construction of a wharf 400 feet long, 25 feet wide on top, and having a depth of 7 feet of water at its outer end. At the close of the fiscal year 344 feet of work had been built up to a height of 8 feet above assumed low water. (Appendix 5, page 61.)

---

**CHETICAMP.**

---

Cheticamp, at the northern end of Inverness County, is situated on the south shore of the Gulf of St. Lawrence, 58 miles from Mabou.

The dredge "George McKenzie" worked from 1st August to 21st October in the channel leading into the harbour, giving a depth of 13 feet. (Appendix 5, pages 61 and 80.)

---

**CLIFTON (OLD BARNs.)**

---

Clifton, Colchester County, is at the head of Cobequid Bay, and is distant from Truro about 7 miles.

A loading wharf, 237 feet long, was built during the fiscal year. (Appendix 5, page 61.)

---

**COMEAUVILLE.**

---

Comeauville, Digby County, is on the south shore of St. Mary's Bay, about 3 miles south-west from Church Point.

---

During the year extensive repairs were made to the wharf. (Appendix 5, page 61.)

---

### COW BAY.

---

Cow Bay, in the County of Cape Breton, is on the eastern coast of the island, about 18 miles south-east of Sydney.

This breakwater is 1,380 feet in length and is exposed to the full force of the Atlantic during easterly gales. It is also much weakened from the ravages of the sea worms. During the year extensive repairs were made to the structure. (Appendix 5, page 62.)

---

### CRANBERRY HEAD.

---

Cranberry Head, also called Sandford, is in Yarmouth County, about 6 miles to the north-west of Yarmouth.

Some small general repairs were made to the pier at this place. (Appendix 5, page 62.)

---

### DIGBY.

---

Digby, the shire town of Digby County, is situated at the western end of Annapolis Basin, and is the terminus of the Western Counties Railway.

The work undertaken during the year was the construction of a block 40 feet by 40 feet on the site of the displaced outer block, of an inclined landing between it and the undamaged inner portion of the pier, and a roadway on pile and framed bents connecting the old and new work.

The removal of the portion of the old outer block which had been washed into the dredged channel on the south side of the wharf was contracted for by Mr. W. E. Browne, but at the close of the fiscal year little progress had been made. (Appendix 5, page 62.)

---

### EATONVILLE.

---

Eatonville, formerly, "Three Sisters," is in Cumberland County, about 10 miles north of Cape Chignecto.

A wharf, 120 feet in length, is under construction at this place. (Appendix 5, page 62.)

---

### ECONOMY.

---

Economy, in Colchester County, is situated on the north side of the Basin of Minas.

A wharf, 216 feet in length, with 12 feet of water at ordinary tides at its outer end, the construction of which was commenced last year, was completed. (Appendix 5, page 62.)



---

## GREAT Tancook Island.

---

Great Tancook Island, Lunenburg County, lies at the mouth of Mahone Bay, about 6 miles south of the town of Chester.

During the fiscal year the outer end and L of the pier at this place were repaired, (Appendix 5, page 62.)

---

## HALIFAX.

---

Halifax, the capital of the Province is situated on the west side of Chebuoto-Bay, or Halifax Harbour, a deep inlet of the Atlantic Ocean.

### EXAMINING WAREHOUSE.

This building was generally repaired where necessary.

### IMMIGRATION OFFICE.

Some necessary repairs were made and furniture supplied.

### QUARANTINE STATION.

The woodwork of the buildings has been repaired and painted, a kitchen built, drains put in, cellars floored, and the surgeon's office fitted up and furnished. (Appendix 2, page 26.)

---

## INGONISH.

---

Ingonish is in Victoria County, on the north-east coast of the Island of Cape Breton, midway between Sydney and Cape North.

The beach protection works referred to in my report of last year were completed. (Appendix 5, page 62.)

---

## LISMORE.

---

Lismore, in Pictou County, is on Northumberland Strait, 18 miles east from Pictou Harbour.

A wharf, 200 feet in length and 20 feet in width on top, has been completed. (Appendix 5, page 62.)

---

## LITTLE NARROWS.

---

Little Narrows, Victoria County, is a contraction of the St. Patrick's Channel of the Great Bras d'Or Lake.

During the year a wharf was constructed on the south side of the Narrows. (Appendix 5, page 62.)

---

### LOWER HORTON.

---

Lower Horton, King's County, is midway between Wolfville and Avonport.

At the close of the year a commencement had been made of repairing the wharf at this place. (Appendix 5, page 63.)

---

### MABOU.

---

Mabou, in Inverness County, is situated on the Gulf of St. Lawrence, 6 miles south of Port Hood.

The brush and stone wall built to arrest the travel of sand from the westward was increased in height and extended 187 feet. Its total length is now 1,112 feet. (Appendix 5, page 63.)

---

### MARGARETVILLE.

---

Margaretville, in Annapolis County, is in the southern shore of the Bay of Fundy, about 42 miles east of Digby Gut.

During the year further heavy repairs were made to this pier. (Appendix 5, page 63.)

---

### METEGHAN COVE.

---

Meteghan Cove, Digby County, is on the southern shore of St. Mary's Bay, about 25 miles from Yarmouth and 40 from Digby.

The seaward face of the pier was close sheathed over a length of 700 feet; 575 feet of the inner face were repaired and sheathed, and other repairs to the structure executed. (Appendix 5, page 63.)

---

### MOIDART.

---

Moidart, Antigonish County, is on the Strait of Northumberland, 3 miles west from Arisaig.

A large rock has been made available as a boat landing by removing boulders from its eastern side, levelling off its top over a distance of 28 feet, and building an approach 73 feet in length. (Appendix 5, page 63.)

---

### McNAIR'S COVE.

---

McNair's Cove, Antigonish County, is situated on the west side of St. George's Bay, about 5 miles south-west of Cape George.

In April, 1887, a contract was entered into for the reconstruction of 160 feet of the breakwater. Between 1st July, 1887, and 30th June, 1888, the necessary materials had been delivered, a block 80 feet in length constructed ready for sinking, and the excavation for the foundation nearly completed. (Appendix 5, page 63.)

## NEW GLASGOW.

New Glasgow, in the County of Pictou, is situated on the East River, near its entrance into Pictou Harbour, and is 10½ miles from Halifax by the Intercolonial Railway.

### PUBLIC BUILDING.

The tubes of the hot water boiler were renewed, a safe supplied to the Custom House, and minor repairs effected. (Appendix 2, page 26.)

## NORTH SYDNEY.

North Sydney, in Cape Breton County, is on the North-West Arm of Sydney Harbour, 18 miles from Sydney.

### PUBLIC BUILDING.

During the year the building to accommodate the Post Office, Customs and other services was completed, fitted up, furnished and occupied. (Appendix 2, page 26.)

## PARRSBORO'.

Parrsboro', in the County of Cumberland, is situated near the mouth of Partridge Island River on the north side of the Basin of Minas.

The outer end of the pier was sheathed, and the whole structure placed in repair. (Appendix 5, page 63.)

## PICTOU.

Pictou, the chief town of the County of Pictou, is situated on the harbour of the same name, which opens into the Strait of Northumberland.

### CUSTOM HOUSE.

A hot water heating apparatus has been fitted up and completed.

### MARINE HOSPITAL.

The building has been supplied with a hot water heating apparatus. (Appendix 2, page 26.)

### HARBOUR.

The dredge "St. Lawrence" obtained a depth of 17 feet over an area of 900 square feet at the Railway Wharf, working from 14th to the 19th May. At the Market Wharf, the same dredge was engaged from 20th May to 23rd June in making a channel from the main channel in the harbour to the wharf, to a depth of 15 feet.

### MIDDLE RIVER.

Between 3rd and 18th October the "St. Lawrence" made a cut 360 feet long and 2½ feet deep opposite the Black Diamond Wharf. (Appendix 5, pages 63, 78 and 79.)

---

**PORT HOOD.**

---

Port Hood, the shire town of the County of Inverness, is on the west coast of Cape Breton, 20 miles north of the northern entrance to the Gulf of Canso.

The outer end of the wharf was repaired and a depth of 12 feet at low water was obtained by the Dredge "St. Lawrence." (Appendix 5, pages 63, 64 and 78.)

---

**PORT MOUTON.**

---

Port Mouton, Queen's County, is situated about 15 miles west of Liverpool. The top of the old mooring pier was rebuilt.

**SOUTH WEST PORT MOUTON.**

A breakwater 165 feet in length with a boat landing for the convenience of fishermen has been built. (Appendix 5, page 64.)

---

**SALMON RIVER.**

---

Salmon River is in Digby County and about 3 miles south of Cape St. Mary.

The Harbour of Salmon River is formed by a breakwater and loading wharf on the south side of the mouth of the river. During the year 182 feet of the river face of the southern pier was rebuilt. (Appendix 5, page 64.)

---

**SAULNIERVILLE.**

---

Saulnierville, Digby County, is on the southern shore of St. Mary's Bay, about 14 miles west of Weymouth.

The landing pier received some necessary repairs. (Appendix 5, page 64.)

---

**SHEET HARBOUR.**

---

Sheet Harbor, in Halifax County, is situated on the Atlantic Ocean, 77 miles east of Halifax.

A contract was entered into for the construction of a ballast wharf 60 feet long by 15 feet wide with an L 18 feet long by 15 wide on top, on the West River, and the work was completed in May, 1888.

---

**SPENCER'S ISLAND.**

---

Spencer's Island, Cumberland County, is at the western end of Greville Bay, in the Minas Channel, Bay of Fundy.

A public wharf, 300 feet in length, is under construction and the work is well under way. (Appendix 5, page 64.)

---

### SUMMERVILLE.

---

Summerville, Queen's County, is situated on the north side of Mouton Bay, about 12 miles west of Liverpool.

Some general necessary repairs were made to the breakwater, which is much exposed to southerly storms, and is also much damaged by the seaworm. (Appendix 5, page 64.)

---

### TROUT COVE (OR CENTREVILLE.)

---

Trout Cove or Centreville, Digby County, is on the south shore of the Bay of Fundy nearly midway between Digby Gut and Petite Passage.

During the year 140 feet of the inner portion of the seaward face was rebuilt from the beach to the top of the "break" and other repairs executed. (Appendix 5, page 64.)

---

### WALLACE.

---

Wallace is in Cumberland County, 16 miles from Wentworth.

The dredge "Cape Breton" was employed in improving the channel for the ferry and in removing obstructions off the "Union Freestone" and "Wallace Greystone" Companies' wharves. (Appendix 5, pages 64 and 79.)

---

### WESTERN HEAD.

---

Western Head, Queen's County, is situated on the southern entrance to Liverpool Bay, about 4 miles from Liverpool.

During the year the construction of a stone breakwater was commenced and was not completed at the close of the year. (Appendix 5, page 65.)

---

### WILLOW COVE.

---

Willow Cove, Queen's County, is at the head of Port Mouton Harbour.

A breakwater, 140 feet in length, was built during the year for the protection of fishing boats. (Appendix 5, page 65.)

---

### WINDSOR.

---

Windsor, the shire town of Hants County, is situated on an arm of the Basin of Minas, 45 miles north-west of Halifax.

#### POST OFFICE BUILDING.

The drains were repaired, cleaned and put in order, storm sashes were supplied to all the windows on the ground and first floors; additions were made to the heating apparatus. Additional office fittings were supplied and sundry general repairs made. (Appendix 2, page 26.)

---

## YARMOUTH.

---

Yarmouth, the shire town of Yarmouth County, is situated on a small bay setting up from the Atlantic, 205 miles south-east of Halifax, and is the terminus of the Western Counties Railway.

### PUBLIC BUILDING.

The various offices were supplied with fittings, furniture and carpets, and asphalt sidewalks were laid on the streets fronting the building. (Appendix 2, page 27.)

### HARBOUR.

The dredge "Canada" was engaged during the whole of the year in improving the channel in the harbour. (Appendix 5, pages 65 and 79.)

---

## PROVINCE OF PRINCE EDWARD ISLAND.

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### BELFAST.

---

Belfast Pier, or as it is locally called "Halliday's," is in Queen's County, and on the south side of Orwell Bay.

The western end of the pier was repaired to admit of the regular landing of passengers and freight. (Appendix 5, page 59.)

---

### CASCUMPEC.

---

Cascumpec, in Prince County, is on the north side of Foxley River, an arm of Cascumpec Bay, and is about 20 miles south of North Cape.

The formation of a channel through the rocky bar obstructing the entrance to the harbour, which was commenced in 1885, was continued during the year. (Appendix 5, page 59.)

---

### CHARLOTTETOWN.

---

Charlottetown, the Capital of the Province, is situated on a neck of land between the North and Hillsboro' Rivers, in Queen's County.

### DOMINION BUILDING.

The windows were repaired, furniture made good, and the grounds graded. (Appendix 2, page 25.)

---

### HICKEY'S PIER.

---

Hickey's Pier is in Queen's County, and on the south-eastern side of the Hillsboro' River, about 10 miles north-west from Charlottetown.

Necessary renewals were made to parts of the pier, a new landing slip was built, the approach partly rebuilt and filled in. (Appendix 5, page 59.)

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**MALPEQUE.**

---

Malpeque is in Prince County, on the eastern side of the entrance to Richmond Bay.

Some repairs were made to the pier at this place.

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**MONTAGUE.**

---

Montague is in King's County, and is about 26 miles east of Charlottetown.

---

**POST OFFICE.**

The fencing has been completed, but only a portion of the grading and foot-paths, owing to the failure on the part of the contractor to carry out this portion of the work. (Appendix 2, page 25.)

---

**MURRAY HARBOUR.**

---

South Murray Harbour Pier, King's County, is at the head of navigation on the South River.

This pier was generally repaired and the approach made good. (Appendix 5, page 59.)

---

**NINE-MILE CREEK.**

---

Nine-Mile Creek, in Queen's County, is about 5 miles west of the Block House Light, at the entrance to Charlottetown Harbour.

The pier at this place received general necessary repairs. (Appendix 5, page 60.)

---

**NEW LONDON.**

---

New London, or Greville Bay, is in Queen's County, about 10 miles south-east of the entrance into Richmond Bay.

The works in this harbour were repaired where necessary. (Appendix 5, page 59.)

---

**NORTH CARDIGAN.**

---

North Cardigan Pier is on the north shore of Cardigan River, near its entrance into Cardigan Bay.

The roadway was repaired to render it available for traffic. (Appendix 5, page 60.)

---

**PINETTE.**

---

This pier is on the south side of the main Pinette River, near the junction of the North and South Branches.

The structure was placed in proper order. (Appendix 5, page 60.)

---

### SOURIS.

---

Souris is on Colville Bay, King's County, 16 miles to the eastward of East Point, and is the eastern terminus of the Prince Edward Island Railway.

The inner end of the breakwater for a distance of 800 feet was raised where necessary and fully ballasted, and other improvements effected. (Appendix 5, page 60.)

---

### TIGNISH.

---

Tignish, Prince County, is at the mouth of the Big Tignish River, and about 8 miles east of North Point.

The Dredge "Prince Edward" was engaged until 27th August, in deepening the channel at this place. (Appendix 5, pages 60 and 80.)

---

### VERNON RIVER.

---

Vernon River Pier is at the head of navigation on the river, and is about two miles above its entrance into Orwell Bay.

The pier was repaired and much improved. (Appendix 5, page 60.)

---

### VICTORIA PIER.

---

Victoria Pier, Crapaud, is at the head of navigation inward from Crapaud Basin.

One of the spans of this pier was repaired. (Appendix 5, page 60.)

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## PROVINCE OF NEW BRUNSWICK.

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### ANDERSON'S HOLLOW.

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Anderson's Hollow, in Albert County, is on the eastern side of Salisbury Bay, which lies between Cape Enragé and Matthew's Head.

A contract has been entered into for the construction of a length of 260 feet of cribwork, to connect the isolated breakwater with the shore, and at the close of the year the work was well under way. (Appendix 5, page 63.)

---

### BAIE VERTE.

---

Baie Verte is on the eastern coast of New Brunswick, at the boundary between that Province and Nova Scotia.

A ballast wharf, 100 feet long by 40 feet wide, was constructed at a point near the head of the bay. The work was done by contract. (Appendix 5, page 65.)



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**BATHURST.**

---

Bathurst, the shire town of Gloucester County, is on Bathurst Bay, which opens into the Baie des Chaleurs, and is about 175 miles from St. John.

**POST OFFICE, &c., BUILDING.**

The building has been fitted up, furnished and occupied; the property fenced on two sides; sidewalks put down on the streets fronting the building, and the yard, &c., graded. (Appendix 2, page 27.)

---

**BELLIVEAU VILLAGE.**

---

Belliveau, in Westmorland County, is on the eastern shore of the Petitcodiac River, about 18 miles below Moncton.

A contract has been entered into for the construction of a public wharf, 233 feet in length, and at the close of the fiscal year about one-third had been built. (Appendix 5, page 5.)

---

**CARLETON.**

---

Carleton is situated in the County of St. John, on the western side of St. John Harbour, and in the Electoral Division of the City of St. John.

**POST OFFICE.**

The roof, eave troughs and down-pipes were repaired, and a contract entered into for supplying the building with electric light. (Appendix 2, page 27.)

---

**CAPE TORMENTINE.**

---

Cape Tormentine, in Westmorland County, is situated on the Strait of Northumberland, and is the point from which the crossing to Prince Edward Island is generally made during the winter.

Owing to the failure of the contractors to prosecute their work, fresh tenders were called for and a second contract has been entered into for the completion of the wharf. (Appendix 5, page 65.)

---

**CHATHAM.**

---

Chatham, in the County of Northumberland, is situated on the Miramichi River, about 12 miles above its mouth.

**POST OFFICE, &c., BUILDING.**

The front and sides of the roof of the wing were re-slatted and the roof repaired generally.

---

---

**QUARANTINE.**

The Caretaker's house was repaired ; chimneys, porches, &c., built for the hospitals, various general repairs made. One of the hospitals raised, and pathways made between the buildings and hospitals. (Appendix 2, page 27.)

---

**CLIFTON.**

Clifton, Gloucester County, is situated on the south shore of the Baie des Chaleurs, about 19 miles eastward of the entrance to Bathurst Harbour.

The breakwater at this place receive 1 general necessary repairs. (Appendix 5, page 65.)

---

**COCAGNE.**

Cocagne, in Kent County, is on the south-west coast of the Strait of Northumberland, about 10 miles west of Shediac.

The wharf built in 1831-52 was levelled up and widened over a length of 100 feet. (Appendix 5, page 66.)

---

**DALHOUSIE.**

Dalhousie, the chief town in Restigouche County, is situated on the south shore of the Restigouche River, at its entrance into the Baie des Chaleurs.

**POST OFFICE, &c., BUILDING.**

A contract has been awarded for the construction of a building of stone, with wooden roof, doors and partitions and metal roof covering. The main building is to be of two and one-half stories, 38 feet by 29 feet. The ground floor for the Post Office, the first floor for the Customs, the attic for the caretaker and the basement for the furnace, fuel, &c. In the rear an Examining Warehouse, 28 feet by 15 feet, of one story, is to be built. (Appendix 2, page 27.)

**HARBOUR.**

The ballast wharf, 300 feet in length, referred to in my report of last year, was completed. (Appendix 5, page 66.)

---

**DORCHESTER.**

Dorchester, the hire town of Westmorland County, is situated on the left bank of the Petitcodiac River, near its entrance into Shepody Bay.

**PENITENTIARY.**

A number of ordinary cell doors were made, some of which were hung. Machines were renewed and repaired. Tank houses were repaired and painted, and general repairs made to other portions of the building. (Appendix 2, page 28.)

---

## FREDERICTON.

---

Fredericton, the Capital of the Province of New Brunswick, is situated in the County of York, on the River St. John, about 60 miles from the City of St. John.

### PUBLIC BUILDING.

Asphalt sidewalks were laid; the Post Office and Custom House supplied with gas fittings; the Weights and Measures Office was fitted up. A flag pole erected and some general repairs made. (Appendix 2, page 28.)

---

## GRAND ANSE.

---

Grand Anse, in Gloucester County, is a small indent on the southern shore of the Baie des Chaleurs, about midway between Bathurst and Shippegan.

Materials have been procured for continuing the work of re-building the top of the breakwater carried away in January, 1885. (Appendix 5, page 66.)

---

## KINGSTON.

---

Kingston, in Kent County, is on the Richibucto River, 3 miles from its mouth, and 86 miles from Shediac.

### MARINE HOSPITAL.

Further renewals and repairs in addition to those referred to in my report of last year were effected to the Hospital Building. (Appendix 2, page 28.)

---

## PARTRIDGE ISLAND.

---

Partridge Island, lies directly off the entrance to the Harbour of St. John.

Many years ago two small piers were built to facilitate the landing of supplies for the lighthouse and other buildings of the Marine Department.

The eastern of these piers was almost destroyed during a storm in February, 1887. The wreckage, which was swept into the harbour, was removed, and at the close of the fiscal year the work of rebuilding the eastern pier was nearly completed. (Appendix 5, page 66.)

---

## MONCTON.

---

Moncton, Westmorland County, is situated at the head of navigation of the Petitcodiac River, and is 80 miles from St. John by Intercolonial Railway.

### POST OFFICE.

The public lobby, porch and doors were altered and some repairs executed. (Appendix 2, page 28.)

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## NEWCASTLE.

---

Newcastle, the shire town of Northumberland County, is situated on the left bank of the Miramichi River, about 18 miles from its entrance into Miramichi Bay.

### PUBLIC BUILDING.

A tube well to provide water for the building was put in. Asphalt sidewalks laid. The yard was paved with cedar blocks. Storm sashes were provided for the windows, and sundry repairs and painting executed. (Appendix 2, page 28.)

---

## PORTLAND.

---

Portland is situated in the County of St. John and adjoins the City of St. John.

### POST OFFICE.

The building received some general repairs. (Appendix 2, page 28.)

---

## RICHIBUCTO.

---

Richibucto is situated on the south west shore of the northern entrance into the Strait of Northumberland, and about 40 miles north of Shediac Harbour.

The breakwater was repaired and 200 feet of brush pile and stone dam was constructed upon the beach.

The Dredge "St. Lawrence" was engaged between the 13th of July and the 7th of September in deepening and otherwise improving the North Channel, one of the outer entrances to the harbour. (Appendix 5, pages 66 and 73.)

---

## RIVER MADAWASKA.

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The Madawaska is a tributary of, and empties into the River St. John, at Edmundston.

The tow path was improved and obstructions removed from the river. (Appendix 5, page 66.)

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## RIVER ST. JOHN.

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The St. John River rises in the highlands which separate Maine from Canada, and for part of its course forms the boundary between Canada and the United States.

Between St. John and Fredericton 78 snags were moved from different parts of the river. From 1st to 18th July, and from 20th September to 15th October, the dredge "New Dominion" was engaged in opening a channel to the public wharf at the head of Belleisle Bay, King's County, at which latter date the work was completed. At Grand Lake, Queen's County, the same dredge was employed in improving the channel through the flats, working from the 18th July to the 10th September. Between Spring Hill and Bear Island, sand bars and boulders were removed. Sand bars and boulders which obstructed the channel, were removed

between Bear Island and Meductic Falls. At Meductic Falls blasting operations were carried on, and sand bars and boulders were removed from the channel between the Falls and Eel River, and the tow path was repaired. The tow path was repaired, and obstructions were removed between Eel River and River des Chutes. Between Aroostook and Salmon River repairs were made to the tow path. Tow path repaired and obstructions removed between Salmon River and Grand Falls. At Grand Falls obstructions were removed, and the shear dam on the east side of the river was repaired. From the Grand Falls to the River St. Francis repairs were made to bridges on the tow path, and the channel was cleared of boulders and sand bars. At Edmundston the breakwater was planked. On the River Tobique, below the forks, the tow path was repaired, and ledges, boulders and other obstructions were removed from the channel. (Appendix 5, pages 66, 67 and 79.)

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### ST. JOHN.

---

St. John, the commercial metropolis of the Province, is situated at the mouth of the St. John River, and is, as is well known, an important seaport.

#### CUSTOM HOUSE.

The roof covering was renewed on part of the building.

The outside iron work was re-painted. Certain of the offices, with the halls and corridors were cleaned, kalsomined and painted, and the woodwork grained and varnished. An alteration was made in the basement to allow carts to deposit the coal directly in the coal vaults.

#### MARINE HOSPITAL.

The roof was temporarily repaired and the heating apparatus extended.

#### POST OFFICE.

An office for matter in bond was fitted up. Iron gratings were placed over basement windows and an iron hand rail outside the building.

#### SAVINGS BANK.

General repairs were made to this building. (Appendix 2, pages 28 and 29.)

#### HARBOUR.

A contract was entered into for reconstructing that portion of the protection work at the inner end of the Breakwater at Negro Point and around the foot of the cliff on which stands Fort Dufferin, which had been much damaged, and for strengthening and repairing other parts of the work, and at the close of the year the work was about half completed. (Appendix 5, page 67.)

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### ST. STEPHEN.

---

St. Stephen, in Charlotte County, is situated at the head of navigation of the Ste. Croix River, which forms part of the boundary between New Brunswick and the United States.

---

**PUBLIC BUILDING.**

A safe, furniture and carpets for the Post Office were supplied, and the plumbing and gas fixtures put in. (Appendix 2, page 29.)

---

**UPPER SALMON RIVER.**

---

Upper Salmon River, Albert County, empties into Salisbury Bay, about 4 miles north-east of Mathews Head.

The further length of the breakwater referred to in my report of last year was completed, and the inner end of that portion built in 1883, was secured by close sheathing and deposits of brush and stone on either side. (Appendix 5, page 67.)

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**WILSON'S BEACH, CAMPOBELLO.**

---

Wilson's Beach is on the western side of Campobello Island, near its northern end.

The breakwater was raised, close sheathed and repaired generally. (Appendix 5, page 67.)

---

**WOODSTOCK.**

---

Woodstock is the shire town of the County of Carleton, and is situated on the left bank of the St. John River, 63 miles from Fredericton by New Brunswick Railway.

**POST OFFICE, CUSTOM HOUSE, &c.**

During the year some carpets were supplied and minor repairs executed. (Appendix 2, page 29.)

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**PROVINCE OF QUEBEC.**

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**AYLMER.**

---

Aylmer is the *chef-lieu* of the County of Ottawa, and is situated on the Ottawa River about 9 miles above the City of Ottawa.

**POST OFFICE.**

A contract has been entered into for the construction of a building of 2½ stories, 39 by 29 feet, of brick walls with stone dressings and foundations, with a wooden annex in the rear, 24 by 20 feet. (Appendix 5, page 29.)

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### BAGOTVILLE.

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Bagotville—or St. Alphonse de Bagotville,—is at the head of Ha! Ha! Bay, River Saguenay.

The flooring of the wharf was repaired where required. (Appendix 5, page 71.)

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### BERTHIER (*EN HAUT*).

---

Berthier (*en haut*), in the county of the same name, is on the north shore of the St. Lawrence, 45 miles north-east of Montreal.

The ice pier built in 1886 was raised 3 feet. (Appendix 5, page 67.)

---

### CAP DE LA MAGDELEINE.

---

Cap de la Magdeleine is in the County of Champlain, about 2 miles below Three Rivers, on the north shore of the St. Lawrence.

A pier 52½ by 23 feet on top, with an approach 200 feet long having 8 feet of water at its head, was built at this place. (Appendix 5, page 67.)

---

### CARLETON.

---

Carleton, Bonaventure County, is on the south shore of the Baie des Chaleurs 36 miles from Campbellton and 5 from Dalhousie, N. B.

A waiting room and freight shed was built on the wharf. (Appendix 5, page 67.)

---

### CHICOUTIMI.

---

Chicoutimi, in the county of the same name, is situated on the south side of the Saguenay River, at the head of navigation, and 71½ miles from Tadoussac.

#### MARINE HOSPITAL.

The interior of the covered way was finished and sundry repairs to the building made. (Appendix 2, page 29.)

---

### COATICOOK.

---

Coaticook, in the County of Stanstead, is on the Coaticook River, 122 miles south-east of Montreal.

#### PUBLIC BUILDING.

As mentioned in my report of last year a site was purchased for the erection of a public building at this place.

During the past year a contract has been entered into for the construction of a building to accommodate the Post Office, Customs and Inland Revenue Offices. It

will be  $2\frac{1}{2}$  storeys, 41 by 56 feet, and a one story annex, 42 feet 6 inches by 20 feet. The walls are to be of brick with stone dressings and on stone foundations. (Appendix 2, page 30.)

---

### COTEAU DU LAC.

---

Coteau du Lac, or St. Jacques de Soulanges, is on the north shore of the River St. Lawrence, 24 miles above Montreal.

A wharf 100 feet long, 20 feet wide, with 6 feet of water at its outer side, with an approach, 110 feet in length, is under construction at this place, and was about half completed at the close of the fiscal year. (Appendix 5, page 68.)

---

### ETANG DU NORD.

---

Etang du Nord is at the western end of Grindstone Island, one of the Magdalen Group, in the Gulf of St. Lawrence.

The breakwater under construction at this place for some time is now completed. It is 500 feet in length, with a width on top of 32 feet. (Appendix 5, page 68.)

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### FLINT'S WHARF.

---

Flint's Wharf is at the head of Lake Megantic.

This wharf which was damaged by the ice on the *débacle* in the spring was repaired.

---

### GROSSE ISLE

---

An island in the St. Lawrence River, about 33 miles below Quebec, in the County of Montmagny.

#### QUARANTINE STATION.

General repairs were made to the building, and the plastering of the brick hospital destroyed by frost was renewed. (Appendix 2, page 30.)

---

### HULL.

---

The City of Hull is in the County of Ottawa, on the north shore of the Ottawa River, and connected with the City of Ottawa by the Union Bridge.

#### POST OFFICE.

The building was completed, fitted up, furnished and provided with a hot water heating apparatus. (Appendix 2, page 30.)

---

### ILE AUX COUDRES.

---

Ile aux Coudres is in the County of Charlevoix, 12 miles from Bay St. Paul. The face timbers and fenders of the wharf were renewed where required. (Appendix 5, page 68.)



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### ISLE PERROT.

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Isle Perrot, in the County of Vaudreuil, is in the St. Lawrence River, between the Lake of the Two Mountains and Lake St. Louis.

The wharf referred to in my report of last year as under construction, has been completed. It consists of a block, 130 feet long, 30 feet wide, having a depth of 8 feet of water, and is distant from the shore, 580 feet. (Appendix 5, page 68.)

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### ILE VERTE.

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Ile Verte is the *chef-lieu* of the County of Temiscouata.

A block 50 by 40 feet, and 20 feet high, is in course of construction at this place. (Appendix 5, page 68.)

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### JOLIETTE.

---

Joliette is in the county of the same name, and is situated on the River 'Assomption.

#### POST OFFICE, &C., BUILDING.

A site having been purchased, a contract has been entered into for the construction of a 2½ story main building, 34 by 50 feet, of brick, with stone dressings and foundations and a one story brick annex, 17 by 31 feet, and the work is under way. (Appendix 2, page 30.)

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### KAMOURASKA.

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Kamouraska, in the county of the same name, is on the south shore of the St. Lawrence, 90 miles below Quebec.

Some necessary repairs were made to the wharf to prevent damage by ice.

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### LAPRAIRIE.

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Laprairie, the *chef-lieu* of the county of the same name, is on the south shore of the St. Lawrence, 7 miles above Montreal.

To prevent the disastrous floods of past years, an earth embankment, 1,600 feet in length, was constructed, and has proved most beneficial. A cribwork retaining wall was also built for a length of 480 feet. A new channel was opened from the main channel in the St. Lawrence to the public wharf, by one of the Departmental dredges. (Appendix 5, pages 68 and 81.)

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### LES ÉBOULEMENTS.

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Les Eboulements, in the County of Charlevoix, is on the north shore of the St. Lawrence, about 69 miles below Quebec.

Small repairs were made to the pier at this place. (Appendix 5, page 68.)

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### L'ISLET.

---

L'Islet is on the south shore of the St. Lawrence, 63 miles below Quebec. The roadway and slip of this pier were repaired. (Appendix 5, page 68.)

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### LONGUEUIL.

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Longueuil, the *chef-lieu* of the County of Chambly, is situated on the south shore of the St. Lawrence, 3 miles from Montreal.

The contract for the construction of the wharf at this place, referred to in my report of last year, was completed during the year. (Appendix 5, page 69.)

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### MARIA INDIAN RESERVE.

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The Roman Catholic Chapel received necessary repairs. (Appendix 2, page 30.)

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### MONTREAL

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Montreal, the largest city in Canada, is situated at the head of ocean navigation of the St. Lawrence, and is the principal port of imports and exports in the Dominion.

### ARMORIES.

The armories are being fitted up and the offices furnished.

### CUSTOM HOUSE.

Extensive changes have been made in the fittings of the long room, and an unfurnished room was fitted up for the records.

### EXAMINING WAREHOUSE.

The roof has been repaired.

### POST OFFICE.

Various necessary changes, additions and repairs were made to this building. (Appendix 2, page 31.)

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### MURRAY BAY

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Murray Bay is in the County of Charlevoix, on the north shore of the St. Lawrence, 84 miles below Quebec.

Some small repairs were made to the wharf. (Appendix 5, page 69.)

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### NEW CARLISLE.

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New Carlisle, the *chef-lieu* of Bonaventure County, is on the north shore of the Baie des Chaleurs, 65 miles below Campbellton, N. B.

The wharf received necessary repair. (Appendix 5, page 69.)

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## NEWPORT RIVER.

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This river empties into the Baie des Chaleurs, 25 miles to the westward of Percé.

Materials for an addition to the protection works have been procured. (Appendix 5, page 69.)

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## PAPINEAUVILLE.

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Papineauville is on the River Ottawa, 41 miles below the City of Ottawa.

From the 23rd of May and up to the close of the fiscal year a Departmental dredge was engaged in opening a channel from the Ottawa into Papineauville Bay, and good progress had been made. (Appendix 5, pages 69 and 81.)

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## PERCÉ.

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Percé, in the County of Gaspé, is situated on the north shore of, and at the entrance to the Baie des Chaleurs.

A contract has been entered into for the construction of a wharf, and at the close of the year the work was in hand. (Appendix 5, page 69.)

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## PIOPOLIS (WHARF).

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Piopolis Wharf is at the south-western end of Lake Megantic.

Small repairs were made to this wharf.

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## PORT DANIEL.

---

Port Daniel, in the County of Bonaventure, is on the north shore of the Baie des Chaleurs, about 75 miles below Campbellton, N. B.

A contract has been entered into for the construction of a wharf 350 feet long and of varying widths, with a block 50 feet square at the outer end, and at the close of the year the work was nearly completed. (Appendix 5, page 69.)

---

## QUEBEC.

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Quebec, the Capital of the Province of the same name, is situated on the north shore of the St. Lawrence River, at its confluence with the River St. Charles, 160 miles below Montreal.

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## CITADEL.

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The usual and ordinary repairs, alterations, &c., of His Excellency's quarters were carried out.

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## CITADEL CLIFF.

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A further quantity of shale liable to endanger life and property was removed.

---

**CUSTOM HOUSE.**

Extensive repairs were effected in the basement floor. The plumbing was in a great part renewed and a new well put in.

**DRILL HALL.**

The building has been completed.

**IMMIGRANT BUILDING.**

This building which was described in my report of last year was completed and handed over to the Department of Agriculture.

**OBSERVATORY.**

The roof and residence were repaired.

**POST OFFICE.**

General repairs were made to the building where required.

**QUEEN'S WHARF BUILDING.**

General repairs were effected. (Appendix 2, pages 31, 32.)

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**RIVER CABANO.**

---

This river flows into Lake Témiscouata.

The river was cleared of boulders and timber over a length of 15 miles. (Appendix 5, page 69.)

---

**RIVER CHATEAUGUAY.**

---

This river enters into the St. Lawrence on its southern shore, some miles above Caughnawaga.

Two of the Departmental dredges operated in the upper arm of the river, to obtain a channel 8 feet deep. (Appendix 5, pages 69, 70, 81 and 82.)

---

**RIVER DU LIEVRE.**

---

The River du Lièvre, in the County of Ottawa, empties into the Ottawa River on its north shore, about 18 miles below the City of Ottawa.

The construction of a lock and dam at the Little Rapids, referred to in my report of last year, was prosecuted by the contractors, and at the close of the year the work was well in hand. (Appendix 5, page 70.)

---

**RIVER DU LOUP (EN BAS) OR FRASERVILLE.**

---

River du Loup, or Fraserville, County of Témiscouata, is situated on the south side of the St. Lawrence, about 114 miles below Quebec.

The inside channel was cleared of a quantity of sand, gravel and boulders. (Appendix 5, page 70.)

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### RIVER DU LOUP (EN HAUT.)

---

This river flows through the County of Maskinongé and empties into the St. Lawrence in Lake St. Peter, 20 miles above Three Rivers.

Dredging through the shoal at the mouth of the river, referred to in my report of last year, was continued. (Appendix 5, page 70.)

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### RIVER GATINEAU.

---

The Gatineau enters into the Ottawa on its northern side, below the City of Ottawa.

The Departmental dredge "Nipissing" was engaged during September and October in dredging a channel below the Canadian Pacific Railway Bridge and through a shoal off the ferry wharf at Gatineau Point. (Appendix 5, pages 70 and 81.)

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### RIVIÈRE MADAWASKA.

---

This river has its source in Lake Témiscouata, and after a course of 30 miles falls into the St. John at Edmundston, N. B.

Rocks and boulders obstructing the navigation were removed from about a mile of the river. (Appendix 5, page 70.)

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### RIVER NICOLET.

---

The River Nicolet, in the county of the same name, flows into the St. Lawrence on its southern shore, at the foot of Lake St. Peter.

A further length of 630 feet of pile protection has been driven. (Appendix 5, page 69.)

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### RIVER OUELLE.

---

The River Ouelle flows through the County of Kamouraska and empties into the St. Lawrence on its southern shore, 75 miles below Quebec.

The pier was repaired. (Appendix 5, page 70.)

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### RIVER RICHELIEU.

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The Richelieu flows into the St. Lawrence on its southern shore, at the head of Lake St. Peter, 45 miles above Montreal.

Two ice piers were constructed during the year to afford protection to the Town of Sorel during the run of ice in the spring.

The Departmental Dredges "Nipissing" and "Queen" were engaged in straightening and deepening the crooked channel between the island and the western shore at St. Antoine. (Appendix 5, pages 70, 80 and 82.)

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### RIVER STE. ANNE DE BEAUPRÉ.

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This river flows through the County of Montmorency, and empties into the St. Lawrence on its north shore, about 22 miles below Quebec.

The improvements undertaken to facilitate the descent of timber on this river have been completed. (Appendix 5, page 71.)

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### RIVER ST. FRANCIS.

---

The River St. Francis rises in the County of Wolfe, and after a course of about 100 miles, empties into Lake St. Peter, on its southern shore.

Dredging through the shoal at the mouth of the river, through a shoal two miles above Tourville Mills, and through another at the Great Bend, was continued during the year. (Appendix 5, page 71.)

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### RIVER ST. LOUIS.

---

The River St. Louis flows eastwardly through the County of Beauharnois, and empties into the St. Lawrence at the Town of Beauharnois.

The deepening of the "Feeder" by the dredge "St. Louis" was completed on the 16th October. (Appendix 5, pages 71 and 82.)

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### RIVER YAMASKA.

---

The River Yamaska is in the county of the same name, and empties into the St. Lawrence on its southern shore, at the head of Lake St. Peter.

Various necessary works of repair and renewal were effected to the lock and dam at Ile à Cardin. (Appendix 5, page 71.)

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### SHERBROOKE.

---

Sherbrooke, the chief town of the county of the same name, is situated on the Magog River, 101 miles east of Montreal, by the Grand Trunk Railway.

#### PUBLIC BUILDING.

The roof was repaired and other work executed. (Appendix 2, page 33.)

---

### SOREL.

---

Sorel, the *chef-lieu* of the County of Richelien, is situated on the right bank of the Richelieu River, at its confluence with the St. Lawrence, 45 miles below Montreal.

#### PUBLIC BUILDING.

A clock has been placed in the tower. (Appendix 5, page 33.)

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**STE. ANNE DE SOREL.**

---

Ste. Anne de Sorel is in the County of Richelieu, about 3 miles below Sorel, on the south shore of the St. Lawrence.

An additional ice pier was built during the year, and pier No. 3 was raised. (Appendix 5, page 71.)

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**STE. ANNE DU SAGUENAY.**

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Ste. Anne du Saguenay is in the County of Chicoutimi, on the River Saguenay opposite Chicoutimi.

Timber has been procured for the construction of the wharf at this place. (Appendix 5, page 71.)

---

**ST. FRANÇOIS (ILE D'ORLÉANS.)**

---

St. François is situated at the extreme eastern end of the Island of Orleans, about 21 miles below Quebec, in the County of Montmorency.

A landing slip was constructed and other works of improvement carried out. (Appendix 5, page 71.)

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**St. IRÉNÉE.**

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St. Irénée, in the County of Charlevoix, is on the north shore of the St. Lawrence, 78 miles below Quebec.

The block was raised 19 feet. (Appendix 5, page 72.)

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**ST. JÉRÔME.**

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St. Jérôme, the *chef-lieu* of the County of Terrebonne, is situated on the North River, 22 miles north of Montreal.

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**PUBLIC BUILDING.**

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A contract has been entered into for the construction of a building of brick, with stone dressings and foundations. The main portion to be 30 by 56 feet, of two stories, basement and attic, with a two story porch in front, 18 by 8 feet, and a one story annex in the rear, 33 by 21 feet, to be occupied by the Post Office, Custom House, Examining Warehouse and Weights and Measures. (Appendix 2, page 32.)

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**ST. LAURENT.**

---

St. Laurent, on the Island of Orleans, County of Montmorency, is 14 miles north-east of Quebec.

The roadway of the wharf was repaired, the slip completed, and repairs made to the face timbers and superstructure. (Appendix 5, page 72.)

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**ST. MICHEL.**

---

St. Michel, in the County of Bellechasse, is on the south shore of the St. Lawrence, 16 miles below Quebec.

Extensive repairs were made to the wharf. (Appendix 5, page 72.)

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**ST. REGIS.**

---

St. Regis is on the St. Lawrence, 6 miles from Cornwall.

**CUSTOM HOUSE.**

Winter sashes were provided and the woodwork and chimney tops repaired. (Appendix 2, page 33.)

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**ST. VINCENT DE PAUL.**

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St. Vincent de Paul is situated on the River des Prairies, in the County of Laval, 13 miles from Montreal.

**PENITENTIARY.**

A boiler and engine room of cut stone was erected and completed. The warden's and deputy warden's residences were renovated and furnished with hot water heating apparatus. The steam heating apparatus for the dormitories and keeper's hall was completed. An ice house and lumber shed were built. The superstructure of the bridge to the quarry was renewed. The keeper's hall was altered and repaired. A large oven was built for the bakery and other general works of improvement and repair effected throughout the buildings. (Appendix 2, pages 32, 33.)

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**THREE RIVERS.**

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The City of Three Rivers, which forms the Electoral District of the same name, is situated at the head of tide water in the St. Lawrence, 72 miles above Quebec.

**CUSTOM HOUSE.**

The building was supplied with a hot water heating apparatus. Some fittings were supplied to the Excise Offices and general repairs effected.

**POST OFFICE.**

The drainage has been altered and extended, and a new hot water furnace with additional piping and radiators put in. (Appendix 2, pages 33, 34.)

**HARBOUR.**

An ice pier, 30 by 26 feet at the base and 17 feet 2 inches in height, was built on the fore shore of the St. Lawrence, at a point 1,600 feet above Deane's wharf. (Appendix 5, page 72.)



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**VAUDREUIL.**


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Vaudreuil, in the county of the same name, is situated on the Ottawa River, about 25 miles above Montreal.

During the year a wharf 324 feet long, 20 feet wide, the outer block being 30 by 20 feet, was constructed at this place. (Appendix 5, page 72.)

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**PROVINCE OF ONTARIO.**


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**AMHERSTBURG.**


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Amhorstburg, in the Electoral District of South Essex, is situated on the Detroit River, near its junction with Lake Erie.

POST OFFICE, &c.

The heating apparatus was altered and some repairs made to the building. (Appendix 2, page 34.)

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**BARRIE.**


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Barrie, in the Electoral District of North Simcoe, is situated on Kempenfeldt Bay, an arm of Lake Simcoe, 60 miles north of Toronto.

POST OFFICE, &c.

A stone enclosure wall was built; block pavement sidewalks were laid on the streets fronting the building, and some fittings and furniture supplied. (Appendix 2, page 34.)

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**BELLEVILLE.**


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Belleville, in the Electoral District of West Hastings, is situated at the mouth of the River Moira, which empties into the Bay of Quinté, 43 miles west of Kingston.

POST OFFICE.

Ordinary repairs were effected to the plumbing, &c. (Appendix 2, page 34.)

HARBOUR.

The dredging of the channel to form an outlet for the river during freshets, was continued during the year, but owing to the shallowness of the water and the hard nature of the material to be removed, the progress was not as rapid as it otherwise would have been. (Appendix 5, page 72.)

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**BERLIN.**


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Berlin, in the Electoral District of North Waterloo, is situated on the Grand River, and is 62 miles from Toronto by Grand Trunk Railway.

**POST OFFICE, &c., BUILDING.**

A new drain was put in; Caretaker's apartments were cleaned and some repairs effected. (Appendix 2, page 34.)

**BRAMPTON.**

Brampton, the chief town of the County of Peel, is situated on the Etobicoke River, 21 miles north-west of Toronto.

**POST OFFICE PUBLIC BUILDING.**

A lot has been obtained whereon to erect a public building; the plans &c., of which are being prepared. (Appendix 2, page 34.)

**BROCKVILLE.**

Brockville, the chief town of the United Counties of Leeds and Grenville, is situated at the foot of the Lake of a Thousand Islands, on the north shore of the St. Lawrence, 125 miles from Montreal.

**POST OFFICE &c., BUILDING.**

A granolithic sidewalk has been laid in front of the building and ventilators put in the windows. (Appendix 2, page 34.)

**CAYUGA.**

Cayuga, the chief town of the County of Haldimand, is situated on the Grand River, 25 miles south of Hamilton.

**POST OFFICE.**

A contract has been entered into for the erection of a Post Office building. It will consist of a 2 story main building with basement and attic, 38½ feet by 25 feet, with a one story annex, 25 by 23 feet, exclusive of the vault. The walls are to be of brick with stone dressings and stone foundations. (Appendix 2, pages 34 and 35.)

**CHATHAM.**

Chatham, the chief town of the County of Kent, is situated on the River Thames, and is 67 miles south-west of London by the Grand Trunk Railway.

**POST OFFICE, &c., BUILDING.**

Ordinary repairs only were effected. (Appendix 2, page 35.)

**COBOURG.**

Cobourg, in the Electoral District of West Northumberland, is situated on the north shore of Lake Ontario, 96 miles west of Kingston.

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POST OFFICE, CUSTOM HOUSE, &c.

Various alterations were made to the building and fittings. (Appendix 2, page 35.)

HARBOUR.

In March last a contract was entered into for rebuilding a portion of the western pier; the work is well in hand. The inner harbour was deepened to 13 feet by one of the Departmental dredges. (Appendix 5, pages 72 and 81.)

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COLLINGWOOD.

Collingwood, in the Electoral District of North Simcoe, is situated on the south shore of Georgian Bay, 94 miles from Toronto by railway.

During the fiscal year a contract was entered into for the construction of work to close the opening between the old slab wharf (so-called) and the western end of the outer breakwater, and at the close of the year the work was nearly completed.

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CORNWALL.

Cornwall, the chief town in the Electoral District of Cornwall and Stormont, is situated on the St. Lawrence River, 67 miles west of Montreal.

POST OFFICE, &c., BUILDING.

A clock has been placed in the tower, the tower ventilated and the clock room floored. (Appendix 2, page 35.)

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GALT.

Galt, in the Electoral District of South Waterloo, is situated on the Grand River, 25 miles north-west of the City of Hamilton.

PUBLIC BUILDING.

Granolithic pavement was laid down along the street line of the building. (Appendix 2, page 35.)

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GANANOQUE.

Gananoque, in the Electoral District of South Leeds, is situated at the mouth of the Gananoque River, which empties into the St. Lawrence, about 20 miles north-east of Kingston.

POST OFFICE.

The town authorities having granted a site, a contract has been entered into for the erection thereon of a 2½ story main building, 38 by 25 feet, with a one story annex, 25 by 25 feet, exclusive of vault. The walls are to be bricked, with stone dressings and stone foundations. (Appendix 2, page 35.)

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### GODERICH.

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Goderich, in the Electoral District of West Huron, is on the east shore of Lake Huron, at the mouth of the River Maitland.

During the year a Departmental dredge was engaged in opening a passage to 18 feet in depth through the shoal which forms off the entrance to the harbour. Dredging was also done alongside the wharves and between the piers. (Appendix 5, pages 73 and 80.)

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### GUELPH.

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Guelph, in the Electoral District of South Wellington, is situated on the River Speed, and is about 48 miles from Toronto by Grand Trunk Railway.

#### POST OFFICE.

The building was cleaned and repaired. (Appendix 2, page 35)

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### HAMILTON.

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The City of Hamilton is in the County of Wentworth, on Burlington Bay, at the western extremity of Lake Ontario.

#### DRILL SHED.

This building, which was described in my report of last year, was nearly completed at the 30th June.

#### POST OFFICE, &c.

The heating apparatus was altered and added to, and some fittings and furniture supplied. (Appendix 2, pages 35 and 36.)

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### HILTON, OR MARKSDALE.

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Hilton, or Marksdale, in Algoma County, is on the north side of St. Joseph Island, nearly opposite Bruce Mines, and about 50 miles from Sault Ste. Marie.

The work referred to in my report of last year as under construction, was completed in August, 1887.

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### KAMINISTIGUIA RIVER.

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The River Kaministiquia rises in Dog Lake, Algoma County, and empties into Thunder Bay, Lake Superior, near Port Arthur.

Further dredging was done to improve the navigation of the river, and the channel through the bar at its mouth was widened. The largest class of vessels navigating the upper lakes, can now go up to the large elevators at Fort William. (Appendix 5, page 75.)

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### KINCARDINE.

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Kincardine, in the Electoral District of West Bruce, is situated at the mouth of the River Penetangore, which empties into Lake Huron, 31 miles north of Goderich.

Sheet piling is being driven along the north face of the southern pier, to prevent its falling into the channel. A Departmental dredge operated from the 29th of August, to the 27th of October, giving a depth of 16 feet at low water between the piers, and removing obstructions in the basin. (Appendix 5, pages 73 and 80.)

### KINGSTON:

Kingston is situated on the eastern shore of Lake Ontario, 172 miles west of Montreal.

#### PENITENTIARY.

Additions, alterations and improvements were made to the various buildings, officers' quarters, workshops, &c, and renewals and repairs were made generally where required, the details of which will be found in Appendix 2, pages 36 and 37.

#### HARBOUR.

Work was continued during the year on Point Frederick Shoal, 2,818 cubic yards of rock having been removed during the year. (Appendix 5, page 73.)

### KINGSVILLE.

Kingsville, in the Electoral District of South Essex, is situated on Lake Erie, between Point Pelée and the Detroit River, about 25 miles east of Amherstburg.

Part of the superstructure of the western pier was rebuilt and stone rip-rap placed on the west side of the western pier to prevent undermining. (Appendix 5, page 73.)

### LAKE OF THE WOODS.

The sum of \$7,000 was voted as aid towards the construction of a dam at Rat Portage, in the District of Keewatin, at the extreme end of the Lake of the Woods, and the dam having been completed the amount was paid to the proper authorities.

### LINDSAY.

Lindsay, in the Electoral District of South Victoria, is on the River Scugog, 42 miles from Port Hope and 65 from Toronto.

#### POST OFFICE, CUSTOM, AND INLAND REVENUE OFFICES.

A site having been obtained a contract has been entered into by the Department for the erection of a building, the main part of which is to be 55½ by 47 feet, of two storeys, attic and basement, a clock tower, a basement and a one story annex, 57 by 23 feet. (Appendix 2, page 37.)

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### LITTLE CURRENT.

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Little Current, in the Electoral District of Algoma, is the channel between La Cloche and Manitoulin Islands, on the route to Sault Ste. Marie from Georgian Bay ports, and is about 140 miles north-west of Collingwood.

The work of increasing the width of the channel, referred to in my report of last year, was continued until the close of the working season of 1887. (Appendix 5, page 73.)

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### SOUTH NATION RIVER.

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This river takes its rise in the Township of Matilda, County of Dundas, and after an irregular course of about 100 miles, falls into the Ottawa at Plantagenet.

Operations were commenced in excavating a channel through a shoal of rock 670 feet in length, 12 miles below the Village of Casselman, and during the year a depth of 6 feet at low water had been obtained over a length of 170 feet. A Departmental dredge was engaged from the 2nd to the 19th of November in removing a deposit of sand which blocked the entrance to the river. (Appendix 5, pages 76 and 81.)

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### LONDON.

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London, in the County of Middlesex, is situated on the River Thames, 121 miles west of Toronto.

#### CUSTOM HOUSE.

The enlargement of this building referred to in my report of last year was completed, and the offices so formed were fitted up and occupied.

#### INFANTRY SCHOOL.

This building has been completed and occupied. (Appendix 2, page 37.)

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### MIDLAND.

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Midland, in the Electoral District of East Simcoe, is at the foot of Gloucester Bay, an arm of Georgian Bay, and is the terminus of the Midland Division of the Grand Trunk Railway.

The wharfing referred to in my report of last year was completed in February last. (Appendix 5, page 73.)

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### MCGREGOR'S CREEK.

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McGregor's Creek runs through the town of Chatham, County of Kent, and empties into the River Thames.

The pile protection work which had been commenced in the previous fiscal year was completed in September, 1887. (Appendix 5, page 73.)

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## NAPANEE.

---

Napanee, the chief town of the County of Lennox, is situated on the Napanee River, 26 miles west of Kingston by the Grand Trunk Railway.

### POST OFFICE AND CUSTOM HOUSE.

A lot having been acquired for a site for a public building, a contract has been entered into for the erection of a stone building, the main portion of which will be 48 by 58 feet of two storeys with attic and basement, a one story annex in the rear 21 by 46 feet, and on the street corner a clock tower. (Appendix 2, page 38.)

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## OAKVILLE.

---

Oakville, in the County of Halton, is on Lake Ontario, 22 miles west of Toronto, and 18 miles east of Hamilton.

The work of rebuilding the outer 360 feet of the eastern pier commenced during the previous fiscal year was completed in October, 1887. The old portion of the eastern pier and the new work were connected, and the channel between the east and west piers dredged to a depth of 12 feet at low water. (Appendix 5, page 74.)

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## ORANGEVILLE.

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Orangeville, in the Electoral District of Centre Wellington, is situated on a branch of the Credit River, and is 40 miles from Toronto by the Toronto, Grey and Bruce Railway.

### POST OFFICE.

A fire proof safe was supplied. (Appendix 2, page 38.)

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## OTTAWA.

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Ottawa, the Capital of the Dominion, comprises an Electoral District returning two members. It is situated on the south shore of the Ottawa River, and is 117 miles from Montreal by Canadian Pacific Railway.

### PRINTING BUREAU.

Good progress has been made in the work of erecting the new printing bureau.

### NEW DEPARTMENTAL BUILDING, WELLINGTON STREET.

Tenders have been invited for the iron staircases, and the heating apparatus will be advertised at an early date.

### PARLIAMENT BUILDING.

The Speaker's apartments, House of Commons, were altered and repaired, and the usual and ordinary repairs to the building, furniture and fittings carried out.

### EAST AND WEST BLOCKS.

The necessary repairs, cleaning, furnishing, fittings, &c., were executed and supplied.

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**VICTORIA HALL.**

This building, on the corner of O'Connor and Queen streets, has been purchased and the upper portion altered and fitted up to accommodate the Canadian Art Gallery pictures, the Fisheries exhibit being retained on the ground floor.

**PUBLIC BUILDINGS, REPAIRING STREETS, &c.**

The streets over which the Department has assumed control were repaired and the sidewalks kept free of snow during the winter.

**PARLIAMENT GROUNDS.**

These grounds were efficiently maintained during the year.

**MAJOR'S HILL PARK.**

Further improvements were effected and the grounds kept in good order.

**GEOLOGICAL MUSEUM.**

An unfinished attic story in the adjoining building was leased, divided up and finished as offices.

**CENTRAL EXPERIMENTAL FARM.**

Contracts have been entered into for the erection of a residence for the Superintendent General of Experimental Farms; of 4 residences for the staff officials; for the necessary barn and stabling connected therewith; for a building for museum, laboratories and offices, full descriptions of which will be found in Appendix 2, pages 39 and 40.

**GOVERNMENT HOUSE.**

A new drying shed has been built in the garden, other buildings received necessary repairs. Drains were laid and the necessary furniture and carpets provided, and the usual cleaning, repairs, &c., carried out. (Appendix 2, page 40.)

**RETAINING WALL, PARLIAMENT HILL.**

A retaining wall of cribwork, 310 feet in length, and 23 feet in height, was built at the foot of the hill between the Rideau Canal and the dynamo house. (Appendix 5, page 75.)

**OTTAWA CITY BRIDGES.**

The various bridges under the control of the Department received general necessary repairs. (Appendix 10, page 134.)

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**OWEN SOUND.**

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Owen Sound, in the Electoral District of North Grey, is situated at the mouth of the Sydenham River, which empties into Georgian Bay.

A small quantity of dredging was done in this harbour.

---

**PARRY SOUND.**

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Parry Sound is in the District of Muskoka, on the Georgian Bay, 65 miles from Collingwood.

Some obstructions were removed from the channel leading up to the wharves.



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**PEMBROKE.**

---

Pembroke, in the Electoral District of North Renfrew, is situated on Allumette Lake, an expansion of the Ottawa River, and is 86 miles from Ottawa by the Canadian Pacific Railway.

**POST OFFICE, &c.**

A contract has been entered into for the construction of a 2½ story stone building, 44 by 50 feet, to accommodate the Post Office, Customs and Inland Revenue Offices. (Appendix 2, page 40.)

---

**PETERBORO'.**

---

Peterboro', in the Electoral District of West Peterboro', is situated on the Otonabee River, about 94 miles north-east of Toronto.

**POST OFFICE.**

The building has been completed, fitted up, furnished and provided with hot water heating apparatus. (Appendix 2, page 41.)

---

**PORTAGE DU FORT BRIDGE.**

---

This bridge crosses the Ottawa at Portage du Fort, 60 miles above the city of Ottawa.

The approach to the bridge on the Ontario side was widened 20 feet and the whole of the superstructure of the bridge painted. (Appendix 5, page 74.)

---

**PORT ALBERT.**

---

Port Albert is on the eastern shore of Lake Huron, about 9 miles north of Goderich.

The piers forming this harbour were repaired and the work was nearing completion at the close of the fiscal year. (Appendix 5, page 74.)

---

**PORT ARTHUR.**

---

Port Arthur, in the County of Algoma, is on Thunder Bay, Lake Superior. The extension of the breakwater 1,600 feet in an easterly direction, and referred to in my report of last year is nearing completion.

Several lumps in the harbour, between the breakwater and the wharves, were removed by a dredge, and the channel deepened at the elevator dock. (Appendix 5, page 74.)

---

**PORT ELGIN.**

---

Port Elgin is on Lake Huron, 24 miles north of Kincardine, in the County of Bruce.

The groyne referred to in the report of last year was completed. Dredging was also done over a portion of the harbour to give easier access to the landing pier. (Appendix 5, page 74.)

### PORT HOPE.

Port Hope is on the north shore of Lake Ontario, 8 miles to the eastward of Cobourg.

Portions of the superstructure of the east pier, and of the railway wharf were repaired, and a bar which had formed off the entrance to the harbour was removed by a departmental dredge. (Appendix 5, pages 75 and 81.)

### PORTSMOUTH.

Portsmouth is situated on the Bay of that name, 2 miles west of Kingston.

During the year the work of renewing the upper 7 feet of this pier, over its whole length, was commenced, and is still in progress. (Appendix 5, page 75.)

### PRESCOTT.

Prescott, in the Electoral District of South Grenville, is situated on the north shore of the St. Lawrence, 112 miles west of Montreal.

#### POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICES.

A site having been acquired on South King street and North Water street, a contract has been entered into for the construction of two buildings each 2½ stories, 49 by 28 feet, with brick walls on stone foundations, the Post Office fronting on King street, the Custom House on Water street. (Appendix 2, page 41.)

### RIVER AUX PÊCHES.

The River aux Pêches flows through the County of Essex and empties into Lake St. Clair.

A further length of 400 feet of pile protection work has been built at the mouth of the river. (Appendix 5, page 75.)

### RIVER OTTAWA.

The Ottawa River flows from Lake Temiscamingue and empties into the St. Lawrence at Ste. Anne de Bellevue, forming for a great part of its length the boundary between Ontario and Quebec.

#### NARROWS ABOVE PEMBROKE.

Dredging on the shoals in this portion of the river was continued during a part of the fiscal year. (Appendix 5, page 75.)

---

**RONDEAU HARBOUR.**

---

Rondeau Harbour, Kent County, is on the north shore of Lake Erie, 140 miles above Port Colborne.

Slight repairs were made to the east and west piers and the piling on the eastern side of the east pier. (Appendix 5, page 75.)

---

**SAUGEEN RIVER PIER.**

---

This pier is situated at the mouth of the Saugeen River, which empties into Lake Huron at the village of Southampton.

The reconstruction of the superstructure of the old pier referred to in my report of last year as being in hand, was completed in July, 1887. (Appendix 5, page 75.)

---

**SOUTHAMPTON.**

---

Southampton, in the Electoral District of North Bruce, is situated at the mouth of the Saugeen River, which empties into Lake Huron.

The outer end of the landing pier was rebuilt and a portion of the eastern breakwater filled with stone and re-planked. (Appendix 5, page 76.)

---

**ST. CATHARINES.**

---

St. Catharines, in the Electoral District of Lincoln and Niagara, is situated on the Welland Canal, about 32 miles east of Hamilton.

---

**POST OFFICE.**

A maple floor was laid down and the building ordinarily repaired. (Appendix 2, page 41.)

---

**ST. THOMAS.**

---

St. Thomas, in the Electoral District of East Elgin, is on the Great Western Division of the Grand Trunk Railway and on the Canada Southern Railway, and is about 15 miles from London.

---

**POST OFFICE, &C., BUILDING.**

An iron fence was put up on the Talbot street front, and general repairs executed. (Appendix 2, page 41.)

---

**THORNBURY.**

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Thornbury, in the Electoral District of East Grey, is situated at the mouth of the Beaver River, which flows into the Georgian Bay, 13 miles from Collingwood.

Further dredging was done during the year to improve the harbour and make it more easy of access.

## TORONTO.

Toronto, this principal city in the Province of Ontario, is situated on Lake Ontario, 161 miles west of Kingston, and comprises the Electoral Districts of East, Centre and West Toronto.

### CUSTOM HOUSE.

The collector's offices and steamboat inspection office were supplied with different articles of furniture.

### EXAMINING WAREHOUSE.

New boiler, engines and an elevator were placed in the building and old machinery altered. General repairs were also made to the original portions of the building.

### POST OFFICE.

The interior of the building and the Peter street branch office were repaired. (Appendix 2, page 42.)

### HARBOUR.

A further quantity of large stone was deposited on the seaward side of the Island Protection Works.

## TRENTON.

Trenton, in the Electoral District of West Hastings, is on the Trent River, at its entrance into the Bay of Quinté, 101 miles east of Toronto.

### POST OFFICE, &c.

A  $2\frac{1}{2}$  story main building, 40 by 49 feet, with a one story annex, 34 by 18 feet, is under course of erection at this place. (Appendix 2, page 42.)

## PROVINCE OF MANITOBA.

### BRANDON.

Brandon, the centre of rich agricultural lands is 130 miles west of Winnipeg.

### IMMIGRANT BUILDING.

The woodwork was repaired and painted. (Appendix 2, page 42.)

### RED RIVER.

The Red River flows from the south and empties into Lake Winnipeg.

Dredging was carried on during the year in the west slough near West Selkirk, in the channel at the mouth of the river, at Salimony's Channel, about  $2\frac{1}{2}$  miles from the mouth, and at West Selkirk. (Appendix 5, pages 76 and 82.)

### WHITE MUD RIVER.

The White Mud River empties into Lake Manitoba, 9 miles north of Westbourne.

A Departmental dredge worked during the year on the shoal at the mouth of the river and in the river itself between Totogan and McArthur's Landing. (Appendix 5, pages 76 and 82.)

---

## STONY MOUNTAIN.

---

Stony Mountain, in the Electoral District of Lisgar, is situated on the Stonewall Branch of the Canadian Pacific Railway, 13 miles north-east of Winnipeg.

### PENITENTIARY.

The hospital and laundry, new chapels, Warden's store and fuel building, and cottages for the guards were completed during the year. The Warden's residence was fitted up with gas and electric bells; furniture &c., were supplied and other work done. Various other additions and improvements were made to the building generally. (Appendix 2, pages 42 and 43.)

---

## WINNIPEG.

---

Winnipeg, the Capital of Manitoba, and forming the Electoral District of Winnipeg, is situated at the confluence of the Red and Assiniboine Rivers.

### CUSTOM HOUSE.

Minor repairs were made and some furniture supplied.

### INFANTRY SCHOOL.

This building has been completed and transferred to the Department of Militia.

### POST OFFICE.

The top story of the building has been fitted up and furnished as offices for the Dominion Land's Branch. Other works of improvement and alterations were effected. (Appendix 2, page 43.)

---

## NORTH-WEST TERRITORIES.

---

### BATTLEFORD.

---

Battleford, in the District of Saskatchewan, is situated on the north-west branch of the River Saskatchewan, about 250 miles north of Swift Current, which is 511 miles west of Winnipeg by Canadian Pacific Railway.

### MOUNTED POLICE BUILDINGS.

The guard house was repaired and renewed, and barracks finished. (Appendix 2, page 44.)

---

## CALGARY.

---

Calgary, in the District of Alberta, is situated on the Bow River, 839 miles west of Winnipeg by the Canadian Pacific Railway.

### BARRACKS.

Contracts have been entered into for the construction of the various buildings connected with the Mounted Police barracks at this place, details of which will be found in Appendix 2, pages 43, 44.

---

**EDMONTON.**

---

Edmonton is situated on the north branch of the Saskatchewan, and 980 miles north-west of Winnipeg.

**COURT HOUSE.**

Fittings and furniture were supplied. (Appendix 2, page 44.)

---

**FORT SASKATCHEWAN.**

---

Fort Saskatchewan, in the District of Alberta, is 200 miles from Calgary, the nearest railway station.

The Mounted Police barracks were repaired and enlarged. (Appendix 2, page 47.)

---

**LETHBRIDGE.**

---

Lethbridge, in Alberta District, is the terminus of the North-West Coal and Navigation Company's Railway from Dunmore on the Canadian Pacific Railway, from which it is 110 miles distant.

**MOUNTED POLICE BUILDINGS.**

Existing buildings were remodelled and enlarged, and various other buildings for Officers' quarters, Quartermaster's store and offices, saddle-room, shops, &c., were built. (Appendix 2, page 44.)

---

**MAPLE CREEK.**

---

Maple Creek, in the District of Assiniboia, is a station on the main line of the Canadian Pacific Railway, 596 miles west of Winnipeg.

A log house for an outpost for the Mounted Police was erected, a similar building being built at Touchwood Hill and Wood Mountain. (Appendix 2, page 45.)

---

**MEDICINE HAT.**

---

Medicine Hat, in the District of Assiniboia, is on the main line of the Canadian Pacific Railway, 660 miles west of Winnipeg.

**BARRACKS.**

The woodwork was painted and ordinary repairs executed. (Appendix 2, page 45.)

---

**McLEOD.**

---

Fort McLeod, in the District of Alberta, is situated on Old Man's River, 102 miles south of Calgary and 30 miles from Lethbridge, which is the nearest railway station.

**CUSTOM HOUSE.**

A one and a-half story building to serve as a Custom House and Bonded Warehouse was erected.

**BARRACKS.**

New chimneys were built and ordinary repairs executed. (Appendix 2, page 44.)

**NORTH SASKATCHEWAN RIVER.**

The Saskatchewan River rises in the Rocky Mountains, and after a course of about 1,200 miles empties into Lake Winnipeg.

A further number of boulders and sand bars were removed from the north branch. (Appendix 5, page 76.)

**PRINCE ALBERT.**

Prince Albert, in the District of Saskatchewan, is situated on the Saskatchewan River, about 200 miles north-west of Qu'Appelle, the nearest station on the Canadian Pacific Railway.

**COURT HOUSE AND GAOL.**

This building which was described in my report of last year, has been completed, fitted up and occupied, and various other additions and improvements made.

**NORTH-WEST MOUNTED POLICE BUILDINGS.**

Various necessary buildings in connection with the police service have been completed. (Appendix 2, page 45)

**QU'APPELLE.**

Fort Qu'Appelle, in the District of Assiniboia, is situated on the Qu'Appelle River, 20 miles from Qu'Appelle Station on the Canadian Pacific Railway.

**INDUSTRIAL SCHOOL.**

The addition to be used as a school for girls, and referred to in my report of last year, is nearly completed. (Appendix 2, page 45.)

**REGINA.**

Regina, the Capital of the North-West Territories, is in the District of Assiniboia, 356 miles west of Winnipeg by Canadian Pacific Railway.

**COURT HOUSE.**

The interior was cleaned, &c., and supplied with furniture, necessary fittings and stoves.

**GAOL AND LUNATIC ASYLUM.**

Fences and outbuildings were erected, a wellhouse built and a force pump put in building.

**INDIAN OFFICES.**

A stone foundation was built under the building, the walls were veneered with brick, and outside woodwork painted.

**LIEUTENANT-GOVERNOR'S RESIDENCE.**

Some necessary repairs were made.

#### MOUNTED POLICE BUILDINGS.

The various buildings connected with the Mounted Police Force were fully described in my report of last year, since which time they have been completed and occupied.

#### NORTH-WEST COUNCIL CHAMBER.

The chamber was repapered and repainted.

#### POST OFFICE.

Minor repairs were effected. (Appendix 2, page 46.)

### PROVINCE OF BRITISH COLUMBIA.

#### COWICHAN RIVER.

The work of improving the channel of the river was continued during the past fiscal year. (Appendix 2, page 76.)

#### ESQUIMALT GRAVING DOCK.

Esquimalt, in the Electoral District of Victoria, is situated on the Strait of San Juan de Fuca, about 3 miles from the City of Victoria.

The dock which was opened in July, 1887 by the entrance of H. M. S. "Cormorant," has been supplied with electric light apparatus, and an ample supply of fresh water. (Appendix 5, page 76.)

#### FRASER RIVER.

The Fraser, the largest river in British Columbia, rises in the Rocky Mountains, and after a course of about 700 miles empties into the Gulf of Georgia.

The improvement of the north channel across the sand banks at the mouth of the river was continued during the year, and the Snag Boat "Samson" was engaged in removing snags from the channel over a length of 90 miles from the mouth upwards. (Appendix 5, pages 76, 83.)

#### NANAIMO.

Nanaimo, in the Electoral District of Vancouver, is on the eastern coast of Vancouver Island, on the Gulf of Georgia, 70 miles from Victoria.

#### POST OFFICE.

Some repairs and improvements were made. Gas was laid in the building and the water pipes extended to the first floor. (Appendix 2, page 47.)

#### HARBOUR.

During the year the removal of the Nicol rock was commenced and on the 30th June the work was well in hand. (Appendix 5, page 77.)



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## NEW WESTMINSTER.

---

New Westminster, in the Electoral District of the same name, is situated on the north bank of the Fraser River, about 75 miles from Victoria.

### PENITENTIARY.

Various works of improvement which were in hand have been completed during the fiscal year, and other works undertaken.

### PUBLIC BUILDING.

Gas fittings have been supplied and some alterations and repairs made to the first floor. (Appendix 2, page 47.)

---

## NICOMECKEL RIVER.

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The "cut off" at the Big Bend has been enlarged. (Appendix 5, page 77.)

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## SERPENTINE RIVER.

---

A ditch or "cut off" about one and a-half miles in length was excavated and has proved most effective in preventing the flooding of adjacent lands. (Appendix 5, page 77.)

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## SOMAS RIVER.

---

The river was cleared of snags and obstructions from its mouth to the steam-boat landing. (Appendix 5, page 77.)

---

## VICTORIA.

---

Victoria, the Capital of British Columbia, is situated on the south-east extremity of Vancouver Island, and forms an Electoral District returning two members.

The Departmental dredge was engaged during the working season of 1887 in removing clay and boulders from around the site of the Dredger Rock, and during the early part of 1888 in deepening in the harbour off Shoal Point. (Appendix 5, pages 77, 82, 83.)

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## DREDGES.

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A list of the dredging plant belonging to the Department will be found in Appendix 5, page 83.

In Appendix No. 5, pages 84 to 110 will be found tables giving details of the disbursements of the various dredges, as well as the classification and quantities of materials removed, and other tables of interest.

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## ENGINEERS, ENGINEMEN, FIREMEN AND CARETAKERS.

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A list of the various engineers, &c., employed in the Public Buildings throughout the Dominion with salaries paid them, &c., will be found in Appendix No. 3, pages 50, 51, 52.

---

## DOMINION BUILDINGS.

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The amounts expended in connection with heating, lighting and water of the various Public Buildings throughout the Dominion will be found in Appendix No. 1, pages 10, 11, 12.

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## PUBLIC BUILDINGS, OTTAWA.

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The report of the Chief Mechanical Engineer on the maintenance of the heating, gas, water and bell services of the various Public Buildings in Ottawa will be found in Appendix No. 4, pages 55, 56.

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## SURVEYS AND EXAMINATIONS.

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During the year surveys and examinations were made at 119 places, a list of which will be found in Appendix No. 5, pages 77, 73.

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## SLIDES AND BOOMS.

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### SAGUENAY DISTRICT.

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The slide and booms to facilitate the descent of timber from Lake St. John to the River Saguenay are situated on La Petite Décharge, the smaller of the two outlets from the lake to the river. The slide is 5,840 feet long, and the booms 1,344 feet.

The reconstruction of the slide was completed during the year and necessary repairs were made to the booms, dams and anchor piers. (Appendix 8, page 123.)

---

### ST. MAURICE DISTRICT.

---

The works on the St. Maurice are situated at seven stations, from the mouth of the river to La Tuque Falls, a distance of 100 miles; and there are also two stations on the Vermillion River, a tributary of the St. Maurice.

Owing to the lateness of the spring the usual quantity of logs taken out in the upper waters of the St. Maurice had not at the end of the fiscal year arrived at the booms at the mouth.

Owing to the care taken in passing timber, the works did not receive much damage. Repairs were made where necessary to the works at the different stations, the details of which will be found in Appendix No. 9, pages 127, 128, 129.

## OTTAWA DISTRICT.

This district embraces the Ottawa River and its tributaries, the Gatineau, Madawaska, Coulange, Black, Petewawa and Dumoine Rivers. There are on it altogether eighty-three stations, and the works for facilitating the descent of timber aggregate about one mile of canal, over three miles of slides, nearly thirteen miles of booms and over seventeen thousand lineal feet of dams, with bulk-heads, piers, glance piers, &c., in proportion.

The very low stage of water was experienced in this river as in others of the Dominion, causing considerable delay in the "drives," many of them having to be abandoned for the season.

The dryness of the season was the cause of many extensive bush fires, which damaged the exposed portions of several of the dams on the Madawaska.

A description of the repairs, reconstruction and construction carried out on the river and its tributaries will be found in Appendix No. 10, pages 133 to 136.

## NEWCASTLE DISTRICT.

The works in this district are of two classes: Those connected with navigation, which are under the control of the Department of Railways and Canals, and those constructed to facilitate the descent of timber down the River Trent and its tributaries, which are under the control of the Department of Public Works.

The water in the district stood at a fair average height, the spring freshet passing away without doing any considerable amount of damage to the different works.

A description of the various works of repairs effected at the different stations will be found in Appendix No. 11, pages 139, 140.

## STAFF EMPLOYED ON SLIDES AND BOOMS.

A list of the staff employed on the different slides and booms, with date of appointment, salary &c., will be found in Appendix No. 12, pages 143 to 145.

## ROADS.

### TEMISCOUATA ROAD.

This road extends from River du Loup (en bas) to the boundary between the Provinces of Quebec and New Brunswick, a distance of 67 miles.

The roadway, culverts and bridges were repaired where necessary. (Appendix 4, page 72.)

## BRIDGES.

### BATTLE RIVER.

A contract has been entered into for the construction of a bridge across the Battle River at Battleford, N. W. T., and at the close of the fiscal year no progress had been made with the work.

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## BOW RIVER.

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This bridge which crosses the Bow River at Calgary, N. W. T., and to which reference was made in my report of last year, has been completed.

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## TELEGRAPHS.

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The various lines owned and operated by the Government or on behalf of the Government were maintained in a state of efficiency during the year.

Besides the completion by the Great North-Western Telegraph Company of the line from Colpoy's Bay to Tobermory, Ontario, a distance of 56 miles, no extensive work beyond that of repoling was executed during the year. Full details, with tables giving the distances, names of operators and salaries paid, on the different lines, will be found in the report of the Superintendent of Government Telegraph Lines. (Appendix 13, pages 149 to 168.)

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## SHIP CHANNEL BETWEEN MONTREAL AND QUEBEC.

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The work of deepening to 27½ feet the channel in the St. Lawrence between Montreal and Quebec, was continued by the Harbour Commissioners of Montreal during the fiscal year. A description of the work done will be found in Appendix No. 6, pages 113 to 115.

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## QUEBEC HARBOUR IMPROVEMENTS.

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The report of the Harbour Commissioners of Quebec on the works under their charge will be found in Appendix No. 7, page 119.

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## OPENING AND CLOSING OF NAVIGATION.

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Appendix No. 14, pages 171 and 172, gives a statement of the dates of the closing of navigation in the winter of 1887, and of the opening in 1888, at the principal ports of Canada, a list of the ports which are always open is also given.

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## NATIONAL ART GALLERY.

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The pictures which had formerly occupied a room over the Supreme Court have been removed to the present gallery over the Fisheries Exhibit on O'Connor St.; the gallery was fitted up for that purpose.

Some additions have been made to the pictures during the year, and the curator reports a steady increase in the number of visitors. (Appendix 17, page 189.)

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## CONTRACTS, PROPERTY PURCHASED, &c.

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Appendix No. 15, pages 175-184, contains statements of the contracts entered into by the Department, of property purchased by the Department, and of property leased by or to the Department, during the fiscal year.

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## ACTS RELATING TO PUBLIC WORKS.

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Appendix No. 16, page 185, contains a list of some of the Public Acts of the Parliament of Canada, passed at the Session of 1888 and having reference to the Public Works Department or works under its charge.

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## DEPARTMENTAL STAFF.

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In appendix No. 18, pages 192 and 193, will be found a list of the Members, Commissioners, and Assistant Commissioners of the Board of Works of the Province of Canada from 1841 to 1867; and of the Ministers, Deputy Ministers, Secretaries, Chief Engineers and Chief Architects of the Department of Public Works, from Confederation to 30th June, 1888.

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## OFFICIAL CORRESPONDENCE.

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Appendix No. 19, page 197, contains a statement of the official correspondence of the Department from 1867 to 30th June, 1888.

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## YEARLY EXPENDITURE ON PUBLIC WORKS.

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Appendix No. 20, page 201, contains an abstract statement of yearly expenditure in each Province, on construction and improvements of Public Works from 1st July, 1867, to 30th June, 1887.

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## ENGINEERS AND ASSISTANTS.

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Appendix No. 21, pages 203 to 221, contains a list (as far as could be ascertained) of engineers and their assistants employed on Public Works of Canada from 1815 to 1889. Attention is called to the note of the Deputy Minister of Public Works on page 203.

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## TABLES OF DISTANCES.

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The supplement to my report for the preceding fiscal year contains various tables and memoranda relating to the inland navigation of Canada, the elevations of the St. Lawrence, Lake Champlain and River Hudson, above mean sea level, the ocean routes from Canada and the United States to foreign countries, the Canadian land routes to the sea board, the Government railways and telegraph lines, the Canadian and United States route from Liverpool to Japan, the Canadian Pacific Railway, Suez Canal and Panama Canal routes, and the cost of the public works of Canada, and these have been omitted from this report, the supplement having been published in 1888.

HECTOR L. LANGEVIN,  
*Minister of Public Works.*

OTTAWA, January, 1889.



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## APPENDICES.

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**APPENDIX No. 1.**

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**STATEMENT OF EXPENDITURE**

**DURING FISCAL YEAR ENDED 30TH JUNE, 1888.**

**BY**

**O. DIONNE, ACCOUNTANT.**

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(Reference No. 93,012.)

## APPENDIX No. I.

STATEMENT showing the Amount expended by the Department of Public Works,  
Dominion of Canada, during the Fiscal Year ended 30th June, 1888.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>PUBLIC BUILDINGS.</b>				
<b>GENERALLY</b> .....			11,351 67	11,351 67
<i>Novi Scotia.</i>				
Amherst Post Office, &c. ....	566 84			566 84
Antigonish do .....		113 30		113 30
Arlivat do .....		150 07		150 07
Baddeck do .....	892 75			892 75
Halifax Dominion Building .....	953 08	512 00		1,471 08
do Examining Warehouse .....		1,760 81		1,760 81
do Penitentiary .....		2,123 81		2,123 81
Laureburg Post Office, &c. ....		53 27		53 27
Nappen Experimental Farm .....	44 28			44 28
New Glasgow Post Office, &c. ....		238 83		238 83
North Sydney do .....	6,220 14			6,220 14
Pictou Custom House Heating apparatus .....	2,672 99	439 60		3,112 59
Sydney Marine Hospital .....	1,106 48			1,106 48
do (South) Quarantine Station. ....	564 21	304 00		868 21
do do Post Office .....	0 45			0 45
Truro Post Office, &c. ....		83 23		83 23
Windsor do .....		286 98		286 98
Yarmouth do .....	3,974 95	30 00		4,004 95
<i>Prince Edward Island.</i>				
Charlottetown Dominion Building (New) ....	10,346 84	2,144 75		12,491 09
Montague Post Office, &c. ....	1,906 30			1,906 30
Summerside do .....	50 07	8 02		98 09
<i>New Brunswick.</i>				
Bathurst Post Office, &c. ....	2,973 41			2,973 41
Carleton (St. John) Post Office .....		38 35		38 35
Orkham Post Office .....		145 91		145 91
do Quarantine Building. ....		480 84		480 84
Dalhousie Post Office, &c. ....	545 73			545 73
Dorchester Penitentiary .....	8,397 91			8,397 91
Fredericton Post Office, &c. ....		2,080 70		2,080 70
Kingston Marine Hospital .....		282 26		282 26
Middle Island Quarantine Station .....		10 00		10 00
Newton Post Office, &c. ....	234 93	85 35		320 28
Newcastle do .....	4,283 03	64 12		4,297 15
Portland do .....	1,625 39	147 98		1,773 37
St. John Custom House .....	1,514 55	406 87		1,921 42
do Port Dufferin .....		116 46		116 46
<b>Carried forward</b> .....	48,869 83	12,107 51	11,351 67	72,329 01

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	48,869 83	12,107 51	11,351 67	72,329 01
<b>PUBLIC BUILDINGS—Continued.</b>				
<i>New Brunswick—Concluded.</i>				
St. John Marine Hospital.....	258 20	15 20		273 40
do Post Office.....	560 53	228 43		788 96
do Savings Bank.....	268 77	457 01		725 78
St. Stephen's Post Office, &c.....	2,217 41	73 07		2,290 48
Sussex do.....		30 35		30 35
Woodstock do.....	1,800 35			1,800 35
<i>Quebec.</i>				
Aylmer Post Office, &c.....	1,205 68			1,205 68
Carillon Canal Office.....		22 91		22 91
Chicoutimi Marine Hospital.....		796 50		796 50
Coaticook Post Office, &c.....	451 64			451 64
Dundas Custom House.....		39 00		39 00
Grosse Ile Quarantine Station.....	3,829 28			3,829 28
Hull Post Office, &c. (New).....	7,573 91	55 00		7,628 91
Joliette do.....	4,305 60			4,305 60
Lévis Cattle Quarantine Building, &c.....	375 20			375 20
Maria Indian Reserve Chapel.....	500 00			500 00
Montreal Armouries.....	44,928 04			44,928 04
do Civil Service Examination Office.....		50 00		50 00
do Custom House.....	15,176 78	80 00		15,256 78
do Drill Shed.....		328 72		328 72
do Examining Warehouse.....	869 62	52 17		921 79
do Inland Revenue Building.....		42 50		42 50
do Post Office.....	9,584 97	1,559 70		11,124 67
Quebec Citadel Buildings.....		1,945 78		1,945 78
do do "Cliff".....	6,025 74			6,025 74
do Civil Service Examination Office.....		4 50		4 50
do Clerk of Works Offices.....		440 00		440 00
do Cutlers' Office.....		774 65		774 65
do Custom House.....	6,619 83	100 00		6,719 83
do Drill Hall.....	4,635 00			4,635 00
do Examining Warehouse.....	2,235 58	14 00		2,249 58
do Immigrant Building.....	27,916 38			27,916 38
do Marine Hospital.....		252 77		252 77
do Observatory.....	612 47			612 47
do Old Parliament Building, site, rent, &c.....		2,397 22		2,397 22
do Post Office.....	357 08	692 72		1,049 80
do Queen's Wharf Buildings.....	1,480 80			1,480 80
Sherbrooke Post Office, &c.....	201 58	170 08		371 66
Sorel do.....	4,744 82			4,744 82
Sta. Anne de Bellevue Inland Revenue Office.....		80 00		80 00
St. Jérôme Post Office, &c.....	1,681 36			1,681 36
St. John's Barracks.....		50 00		50 00
do Post Office, &c.....		150 00		150 00
St. Régis Custom House.....		177 50		177 50
St. Vincent de Paul Penitentiary.....	37,324 87			37,324 87
Three Rivers Custom.....	3,317 90	31 10		3,349 00
do Post Office.....	829 57	48 62		878 19
Carried forward.....	240,728 79	20,869 79	13,748 89	275,347 47

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	240,728 79	20,889 79	13,748 89	275,347 47
<b>PUBLIC BUILDINGS—Continued.</b>				
<i>Ontario.</i>				
Amherstburg Post Office, &c.....		203 55		203 55
Barrie do.....	3,728 68	6 50		3,735 18
Belleville do.....		141 25		141 25
Berlin do.....	547 45	22 38		569 83
Brampton do.....	27 20			27 20
Brantford do.....	23 00	39 46		62 46
Brockville do.....	717 97			717 97
Cayuga do.....	1,800 50			1,800 50
Chatham do.....	18 30	26 76		55 06
Chilton do.....		45 38		45 38
Cobourg do.....	1,406 78			1,406 78
Corwall do.....	2,668 35	265 01		2,933 36
Dundas do.....	2,249 00	1,000 00		3,249 00
Galt do.....	1,070 77	12 95		1,083 72
Gananoque do.....	4,862 55			4,862 55
Goderich do.....	1,054 69			1,054 69
Gravelly do.....	544 48			544 48
Hamilton Custom House (Old).....		9 60		9 60
do Drill Hall.....	42,509 52			42,509 52
do Immigration Station.....	813 70			813 70
do Post Office, &c.....	3,737 95	235 54		3,993 49
Kingston Civil Service Examination Offices.....		26 40		26 40
do Custom House.....	7 20			7 20
do Military College.....	575 01	14 00		589 01
do Penitentiary.....	17,398 22			17,398 22
do Post Office.....		1,063 26		1,063 26
Lindsay do &c.....	4,180 44			4,180 44
London Custom House.....	14,963 75	752 50		15,716 25
do Infantry School.....	30,088 96			30,088 96
do Post Office.....		1,332 74		1,332 74
Napanee do &c.....	4,718 39			4,718 39
Orangeville do &c.....	329 32	8 90		338 22
Ottawa Central Fire Station (Government grant to Corporation).....	15,000 00			15,000 00
do Examining Warehouse.....	116 45	1,765 83		1,882 28
do Experimental Farm.....	54,761 52			54,761 52
do Geological Museum.....		1,671 71		1,671 71
do do Gas.....			674 80	674 80
do National Art Gallery.....			1,180 35	1,180 35
do Post Office, &c.....	369 75	3,553 13		3,922 88
do do Gas.....			1,961 00	1,961 00
do Printing Bureau.....	53,112 41			53,112 41
do do (temporary).....		738 33	175 00	913 33
do Public Buildings.....		138,304 62		138,304 62
do do Gas.....			15,741 67	15,741 67
do do Grounds.....			10,370 28	10,370 28
do do Heating.....			54,721 36	54,721 36
do do Indian Affairs—Gas.....			383 90	383 90
do do Main Tower (W.B.) re-cov- ering.....	2,783 71			2,783 71
do do Major's Hill Park.....			8,763 66	8,763 66
Carried forward.....	506,441 79	172,119 59	107,720 91	786,282 29

## APPENDIX NO. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts	\$ cts	\$ cts	\$ cts
Brought forward.....	506,411 79	172,119 59	107,720 91	786,252 29
PUBLIC BUILDINGS—Continued.				
Ontario—Concluded.				
Ottawa, Public Buildings, Parl't Bdg.—Library...	3,046 06	.....	.....	3,046 06
do do do Re-covering	.....	.....	.....	.....
do do do Lean-to Roof	1,858 87	.....	.....	1,858 87
do do do Speakers' Ap- partments ...	5,258 63	.....	.....	5,258 63
do do do Ventilation, Electric Lighting, &c...	817 85	.....	.....	817 85
do do do Removal of Snow .....	.....	.....	2,034 94	2,034 94
do do do Telephonic Service.....	.....	.....	2,706 41	2,706 41
do do do Water .....	.....	.....	13,537 75	13,537 75
do do do Wellington Street Block ....	118,673 40	.....	.....	118,673 40
do Supreme Court .....	2,893 62	317 42	.....	3,211 04
do Victoria Hall—Purchase of and Fitting up	15,328 40	.....	.....	15,328 40
Pembroke Post Office, &c .....	2,408 60	.....	.....	2,408 60
Peterborough do .....	13,138 98	.....	.....	13,138 98
Port Arthur Immigrant Shed .....	.....	117 00	.....	117 00
do Dalhousie Canal Office .....	.....	150 12	.....	150 12
do Hope Post Office, &c .....	2,837 69	9 00	.....	2,846 69
Prescott do .....	4,328 09	.....	.....	4,328 09
Rideau Hall.....	.....	23,272 21	.....	23,272 21
do Gas—New Edinburgh Street Lamps..	.....	.....	316 68	316 68
do Allowance for fuel and light.....	.....	.....	8,000 00	8,000 00
do Removal of Snow .....	.....	.....	703 98	703 98
St. Catharines Post Office, &c .....	.....	58 09	.....	58 09
St. Thomas do .....	111 27	.....	.....	111 27
Stratford do .....	.....	455 18	.....	455 18
Toronto Civil Service Examination Offices..	.....	99 91	.....	99 91
do Custom House.....	282 35	14 04	.....	296 39
do Examining Warehouse .....	15,667 08	683 76	.....	16,350 84
do Immigrant Shed .....	173 44	256 71	.....	430 15
do Inland Revenue Office.....	.....	61 00	.....	61 00
do Post Office .....	3,117 76	41 67	.....	3,159 43
Trenton do &c .....	6,257 72	.....	.....	6,257 72
Windsor do &c .....	132 70	105 85	.....	238 55
Manitoba.				
Brandon Experimental Farm.....	44 80	.....	.....	44 80
do Immigrant Shed.....	248 82	.....	.....	248 82
do Post Office.....	21 50	.....	.....	21 50
Stony Mountain Penitentiary.....	58,836 10	.....	.....	58,836 10
Winnipeg Architect's Office.....	.....	935 97	.....	935 97
do Custom House.....	418 61	10 00	.....	428 61
do Dominion Lands Office .....	.....	11 10	.....	11 10
do Immigrant Buildings .....	5,041 65	436 68	.....	5,478 33
do Mounted Infantry School.....	2,216 85	.....	.....	2,216 85
do Post Office .....	10,608 42	51 23	.....	10,659 65
do Powder Magazine.....	957 50	.....	.....	957 50
Carried forward.....	781,166 55	199,208 43	135,030 65	1,115,395 63

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward .....	781,166 55	189,268 43	135,020 65	1,115,395 63
<b>PUBLIC BUILDINGS—Continued.</b>				
<i>North-West Territories.</i>				
Essex Mounted Police Barracks .....	529 73			529 73
Estleford do .....	8,630 27			8,630 27
Calgary Court House .....	10 00	11 05		21 05
do Mounted Police Barracks .....	1,811 51			1,811 51
Oyress Hills do .....	1,000 00			1,000 00
Fort McLeod do .....	1,025 42			1,025 42
Fort Saskatchewan do .....	2,000 00			2,000 00
Indian Head Experimental Farm .....	9 87			9 87
Lethbridge Mounted Police Barracks .....	20,121 54			20,121 54
Long Lake Industrial School .....	38 62			38 62
Naple Creek Mounted Police Barracks .....	642 00			642 00
Medicine Hat do .....	351 43			351 43
McLeod Custom House .....	4,300 59			4,300 59
do General Hospital .....	1,000 00			1,000 00
Prince Albert Court House and Jail .....	9,897 38	32 47		9,9 9 85
do Mounted Police Barracks .....	59,788 97			59,788 97
Public Buildings generally .....			2,059 21	2,059 21
Qu'Appelle Industrial School .....	11,512 97			11,512 97
Regina Court House .....	3,387 20	46 96		3,434 16
do Jail and Lunatic Asylum .....	5,747 98	133 14		5,981 10
do Lieut.-Governor's Residence .....	298 69			298 69
do Mounted Police Barracks .....	31,653 85			31,653 85
do North-West Council Chamber .....	167 66			167 66
do Public Buildings—Dam for water supply .....	740 02			740 02
do Riding Hall .....		413 60		413 60
Touchwood Hill Mounted Police Barracks .....	413 00			413 00
Wood Mountain do .....	1,565 60			1,565 60
<i>British Columbia.</i>				
Agassiz Experimental Farm .....	61 76			61 76
Nanaimo Post Office, &c. ....	220 75	150 88		371 63
New Westminster Land Office .....		42 00		42 00
do Penitentiary .....	18,561 43			18,561 43
do Post Office, &c. ....	440 45	1,063 49		1,503 94
Victoria Assistant Receiver-General's Office .....	3,202 00			3,202 00
do Custom House .....		120 91		120 91
do Post Office .....		1,392 62		1,392 62
do Quarantine Station .....		30 00		30 00
<i>England.</i>				
London High Commissioner's House .....		245 01		245 01
Carried forward .....	969,293 23	202,890 56	137,079 86	1,309,263 64

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
<b>PUBLIC BUILDINGS—Continued.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>
Brought forward.....	969,293 22	202,890 56	137,079 86	1,309,263 64
<b>EXPENDITURE ON ACCOUNT FOLLOWING SERVICES.</b>	<b>Salaries of Engineers, &amp;c.</b>	<b>Heating.</b>	<b>Lighting.</b>	<b>Water.</b>
<i>Nova Scotia.</i>	<b>\$ cts.</b>	<b>\$ cts.</b>		
Amherst Post Office.....	457 23	260 06	56 15	773 44
Antigonish do .....	45 00			45 00
Arichat do .....		102 00		102 00
Baddeck do .....	200 00	87 50	37 38	324 88
Halifax Dominion Building ....	2,261 59	966 94	2,052 00	6,245 53
do Examining Warehouse.....	508 80	52 36	33 00	784 05
do Penitentiary.....	450 00	44 13	9 00	503 13
New Glasgow Post Office .....	439 75	175 74	88 22	715 71
North Sydney do .....	166 65	195 00		361 65
Pictou Custom House.....	180 80	161 47		342 27
do Marine Hospital.....		107 28		107 28
Truro Post Office .....	410 80	143 04	78 40	647 24
Windsor do .....	400 06	220 52	96 00	761 52
Yarmouth Post Office, &c.....	416 90	200 00	439 60	1,116 50
<i>Prince Edward Island</i>				
Charlottetown Dom. Building..	1,721 76	415 60	1,516 02	3,678 88
Montague Post Office.....	74 41	68 13	2 70	145 24
Summerside do .....	402 37	279 77	40 80	722 94
<i>New Brunswick.</i>				
Bathurst Post Office, &c.....	415 97	811 53		1,227 50
Carleton (St. John) P. Office, &c. ....			184 50	174 50
Chatham Post Office, &c .....		123 29	73 60	196 89
Fredericton Post Office, &c.....	402 50	353 26	300 87	1,069 63
Moncton do .....	412 70	228 35	635 69	1,410 74
Newcastle do .....	430 66	395 75	210 30	1,036 71
Portland do .....		26 98	46 25	155 23
St. John Custom House.....	1,960 68	1,747 97	137 90	4,245 75
do Marine Hospital.....		413 34	286 00	715 88
do Penitentiary .....	450 00	48 00	7 50	505 50
do Post Office.....	1,007 93	534 24	1,803 30	3,660 54
do Savings Bank.....		253 00	89 20	342 20
St. Stephen's Post Office, &c.....	415 96	154 50	391 80	1,014 01
Sussex do .....	408 78	180 18		588 96
Woodstock do .....	421 05	174 99	295 13	925 17
<i>Quebec.</i>				
Hull Post Office, &c.....	149 96	377 66	31 04	627 66
Montreal Custom House.....	870 00	1,147 67	384 15	2,778 97
do Drill Hall.....	703 63	493 66		1,197 26
do Exam. Warehouse.....	1,110 00	1,623 19	309 75	3,492 89
do Island Revenue Office .....	731 46	282 15	132 45	1,242 96
do Post Office.....	1,247 94	1,045 33	2,927 66	7,808 76
Carried forward .....	19,265 22	13,884 57	12,666 36	51,844 94



## APPENDIX No. 1—Continued.

Name of Work.		Con- struction.	Repairs.	Staff and Maintenance	Total.
PUBLIC BUILDINGS—Continued.		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....		969,293 22	202,890 56	137,079 86	1,309,263 64
EXPENDITURE ON ACCOUNT SERVICES MENTIONED—Con.		Salaries of Engineers, &c.	Heating.	Lighting.	Water.
Quebec—Concluded.		\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....		19,265 22	13,884 57	12,666 86	6,028 79
Montreal Post Office St. Catharine St....				6 00	6 00
do do Norte Dame St.....				14 00	13 30
do do St. Lawrence St.....				8 20	8 55
Quebec Citadel Buildings.....	48 50	206 49	105 97		360 96
do Clerk of Works Office.....	7 12				7 12
do Cutlers' Office.....	495 00				495 00
do Custom House.....	1 65	701 02	28 87	20 00	751 54
do Exam. Warehouse.....	1,290 21	741 29		600 00	2,631 50
do Marine Hospital.....		1,650 00			1,650 00
do Observatory.....				109 75	109 75
do Post Office.....		503 42	627 52	2,781 60	3,912 54
Sherbrooke Post Office, &c.....	432 57	135 10	353 75	50 00	971 42
Sorel do.....	410 45	262 05	79 50	500 00	1,252 00
St. John's do.....	350 00	160 00		30 00	540 00
St. Vincent de Paul Penitentiary.....		1,472 00			1,472 00
Three Rivers Custom House.....	583 30	222 34		71 76	878 40
do Post Office.....	406 08	183 05	191 70	60 00	840 83
Ontario.					
Amherst Post Office, &c.....	450 65	229 19	72 01		751 85
Barrie do.....	403 80	262 00	246 44	25 00	937 24
Belleville do.....	609 20	411 50	482 88	21 00	1,524 58
Berlin do.....	412 88	147 33	192 70		752 91
Brantford do.....	621 05	278 62	245 00		1,144 67
Brockville do.....	425 52	251 50	457 80	255 00	1,389 82
Chatham do.....	859 25	70 00	268 81		1,198 06
Clifton do.....	410 55	322 00	34 18	24 35	791 11
Cobourg Inland Revenue.....					
do Post Office.....	180 00	220 00	105 60		505 60
Cornwall do.....	381 66	185 40	452 50	33 75	1,053 31
Dundas do.....		31 25	33 04		64 29
Dunnville Canal Office.....					
Galt Post Office.....	403 90	258 65	150 90		813 45
Gananoque Custom House.....		125 00			125 00
Guelph do.....	448 81	277 99	226 60	37 44	1,000 84
Hamilton Custom House.....	405 00		37 58	21 00	463 58
do Post Office, &c.....	988 65	1,359 87	1,708 79	50 00	4,107 31
Kingston Canal Tolls Office.....				13 50	13 50
Carried forward.....	30,291 02	24,551 63	18,806 70	10,765 82	84,405 17
					1,309,263 64

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance.	Total.	
<b>PUBLIC BUILDINGS—Concluded.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	
Brought forward .....	968,293 22	202,890 56	137,079 86	1,309,263 64	
<b>EXPENDITURE ON ACCOUNT SER- VICES MENTIONED—Con.</b>	<b>Salaries of Engineers, &amp;c.</b>	<b>Heating</b>	<b>Lighting.</b>	<b>Water.</b>	
<b>Ontario—Concluded.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	
Brought forward.....	30,291 02	24,551 63	18,806 70	10,755 82	84,405 17
Kingston Custom House .....	485 84	80 80	74 50	641 14	
do Inland Revenue Office .....	.....	59 00	35 12	94 12	
do Military College. ....	1,440 00	.....	.....	1,440 00	
do Penitentiary .....	.....	.....	.....	.....	
do Post Office.....	1,503 32	840 00	312 80	45 98	2,202 08
London Custom House .....	46 00	522 84	139 40	64 78	773 02
do Post Office. ....	1,000 00	600 61	427 65	36 00	2,064 26
Orangeville Post Office .....	60 35	217 75	35 75	.....	863 85
Perth Inland Revenue Office....	4 5 09	.....	.....	.....	415 09
Peterborough Post Office.....	296 58	228 09	29 20	.....	553 87
Port Hope do .....	414 35	149 50	171 50	.....	735 35
Stratford do &c .....	604 50	268 90	315 60	47 25	1,236 25
St. Catharines do &c ....	422 47	325 80	190 85	45 00	984 12
St. Thomas do .....	423 75	379 35	352 60	9 60	1,165 20
Toronto Custom House.....	500 00	432 00	118 16	90 00	1,140 16
do Examining Warehouse.	2,682 98	959 35	25 52	175 00	3,842 86
do Inland Revenue Office.	180 09	379 54	125 01	59 25	743 80
do Post Office.....	1,307 42	758 75	2,226 05	7-9 25	5,081 47
Windsor do &c .....	1,015 10	453 37	416 63	81 65	1,966 80
<b>Manitoba.</b>					
Winnipeg Custom House .....	70 00	757 00	210 60	.....	1,037 60
do Dom. Lands Office....	.....	266 00	2 40	.....	268 40
do Immigrant Shed .....	.....	31 25	.....	.....	31 25
do Post Office .....	2,081 21	2,340 77	696 17	295 83	5,413 98
<b>North-West Territories.</b>					
Prince Albert Court House, &c	545 44	286 73	.....	.....	832 17
Regina Court House .....	228 00	562 56	.....	19 50	810 06
do Jail and Lunatic Asy- lum .....	22 50	.....	.....	.....	22 50
do Post Office .....	.....	273 66	.....	.....	273 66
<b>British Columbia.</b>					
Nanaimo Post Office .....	600 00	135 00	144 15	36 00	915 15
New Westminster Post Office...	600 00	185 87	103 45	.....	889 25
Victoria Custom House.....	.....	78 50	.....	.....	78 50
do Post Office.....	.....	217 50	800 13	30 00	1,047 63
<b>DEMIGNION BUILDINGS GENERALLY</b>	<b>810 00</b>	<b>1,750 82</b>	<b>.....</b>	<b>.....</b>	<b>2,560 82</b>
<b>Totals .....</b>	<b>48,110 06</b>	<b>37,918 98</b>	<b>25,790 20</b>	<b>12,690 51</b>	<b>124,509 77</b>
<b>Carried forward.....</b>	<b>.....</b>	<b>968,293 22</b>	<b>202,890 56</b>	<b>261,589 63</b>	<b>1,432,773 41</b>

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward .....	999,293 22	202,890 56	261,589 63	1,433,773 41
<b>HARBOURS AND BREAKWATERS.</b>				
<i>Nova Scotia.</i>				
Annapolis River—Channel Improvement.....	*125 00			125 00
Armsig Harbour Works.....	*541 41			541 41
do Pier .....	6,450 28			6,450 28
Avonport Wharf.....	*816 00			*816 00
Barney's River (Dredging Channel) .....	*1,690 60			1,690 60
Bayfield (Pomquet) Wharf.....	*4,244 24	2,495 00		6,739 24
do Dredging, &c.....	5,907 64			5,907 64
Bay St Lawrence .....	1,330 27			1,330 27
Belliveau Cove Wharf.....	*1,120 52			1,120 52
Big Bras d'Or do .....	1,223 45			1,223 45
Big Pond .....	400 00			400 00
Blue Rock .....	2,327 78			2,327 78
Boularderie .....	1,237 77			1,237 77
Broad Cove Pier .....	*\$1,000 00			
do do .....	appn. 4,075 36			
	5,075 36			5,075 36
Brulé Wharf.....	*1,045 13			1,045 13
Canada Creek Piers .....	*550 00			550 00
Cape Cove Breakwater.....	*1,304 38			1,304 38
Cherry Hill—Boat Harbour .....	*150 00			150 00
Chester Canal—Cutting Passage.....	*40 00			40 00
Cheverie Pier .....		505 05		505 05
Chipman's Brook Breakwater.....	*1,620 00			1,620 00
Church Point Wharf.....	*1,692 00			1,692 00
Clifton—(Old Barns) .....	1,496 43			1,496 43
Comeauville.....	3,135 56			3,135 56
Cow Bay Breakwater.....	*\$1,000 00			
do do .....	appn. 5,291 37			
	7,291 37			7,291 37
Cranberry Head Breakwater.....	*1,297 15	768 74		2,065 89
Digby Pier.....	*\$11,632 00			
do do .....	appn. 7,467 68			
	19,099 68			19,099 68
Eagle Head Wharf.....	*1,344 67			1,344 67
Eatonville do .....	120 99			120 99
Economy Breakwater .....	1,546 64			1,546 64
Fox Island or Lawrencestown .....	770 00			770 00
Grand Narrows Wharf.....	*543 00			543 00
Great Tanook Island.....	1,255 44			1,255 44
Green Cove or Port Maitland Harbour.....	*1,971 66			1,971 66
do Breakwater .....		53 65		53 65
Gros Nez do .....	*103 95			106 95
Hall's Harbour.....	*310 00			310 00
Hampton Pier .....	*1,538 10			1,538 10
Harbourville Breakwater .....	*323 00			323 00
Herring Cove.....	*955 22			955 22
Iron Wharf—Grand Narrows .....	*746 70			746 70
Kingsport (formerly "Oak Point") Pier .....	*1,738 14			1,738 14
La Have Islands (Cutting Passage) .....	*600 00			600 00
do River (Clearing Channel) .....	*260 00			260 00
				00
Carried forward.....	1,054,656 05	29,613 00	261,589 63	1,522,9

\* Amounts expended by Provincial Government between 1867 and 1879, and refunded to the Dominion. (U. O. No. 76,362, dated 7th April, 1887.)

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	1,054,656 05	206,713 00	261,589 63	1,522,958 68
<b>HARBOURS AND BREAKWATERS—Con.</b>				
<i>Nova Scotia—Continued.</i>				
Lismore.....	702 89			702 89
Little Narrows.....	75 00			75 00
Liverpool Harbour—Dredging Bar.....	*508 62			508 62
Lower Horton.....	737 31			737 31
Mabou Harbour.....	1,998 28			1,998 28
Maitland Pier.....		499 86		499 86
Margaree Harbour—Repairs to Beach.....	*274 83			274 83
Margaretville Pier.....	*\$ 694 67			
do..... appn. 3,416 93				
Metegawatch—Boat Canal.....	4,111 60			4,111 60
Meteghan Cove Pier.....	*220 00			220 00
do River Breakwater.....	*1,447 33			1,447 33
do do..... appn. 2,690 63				
Millis Point Wharf.....	3,973 96			3,973 96
Mills Harbour.....	*384 00			384 00
Morden Breakwater.....	*1,068 20			1,068 20
Moydard Cove.....	*60 00			60 00
McNair's Cove.....	299 78			299 78
Ogilvie Wharf.....	3,535 57			3,535 57
Parraboro Pier.....	*470 00			470 00
Petersen or Black Rock Harbour.....	*1,674 80	299 93		1,974 73
Pickett's Pier.....	*507 27			507 27
Pickett's Pier.....	*55 00			55 00
Pickton Island Wharf.....	*\$ 400 00			
do do.....	867 67			
Plympton Wharf.....	1,267 67			1,267 67
Port George Harbour.....	*100 00			100 00
do Greville Wharf.....	*1,076 75			1,076 75
do do.....	*\$ 938 00			
do do.....	1,415 10			
do Hood do.....	2,353 10			2,353 10
do Hood Island Breakwater.....	*916 11	250 06		1,166 11
do Latour Canal—deepening passage.....	*654 47			654 47
do Lorne Harbour.....	*658 33			658 33
do Mouton Breakwater.....	*1,589 33			1,589 33
do do.....	*\$ 431 65			
do do.....	3,284 83			
Salmon River Piers.....	3,716 48			3,716 48
do do.....	*\$ 829 82			
do do.....	1,498 97			
Saulnièreville Wharf.....	1,828 89			1,828 89
Sheet Harbour.....	*1,926 53			1,926 53
Sheel Harbour.....	1,772 66			1,772 66
Sheel Harbour.....	*167 00			167 00
Sheelville do —removing rock.....	*51 00	769 98		821 98
South Ingonish Harbour.....	801 65			801 65
St. Peter's Island Wharf.....	2,037 49			2,037 49
Carried forward.....	1,097,975 45	208,559 77	261,589 63	1,568,124 85

Amounts expended by Provincial Government between 1867 and 1879, and refunded to them by the Government. (O. C. No 76,362, dated 7th April, 1887.)

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	1,097,975 45	208,559 77	261,589 63	1,568,124 85
<b>HARBOURS AND BREAKWATERS—Con.</b>				
<i>Nova Scotia—Conclude 1.</i>				
Tancook Island .....	*2,000 00			2,000 00
Tracadie Harbour .....	*1,228 69			1,228 69
Treat Cove or Centreville Breakwater* \$ 695 00				
do do do 1,991 75				
	2 676 75			2,676 75
Tasket Wedge—Removing obstructions. ....	*193 00			193 00
do Wharf.....	*600 00			600 00
Victoria Pier .....	*450 00			450 00
West Arichat Breakwater. ....	*2,000 00			2,000 00
Western Head .....	2,544 03			2,544 03
White Point Breakwater .....	*1,643 55			1,643 55
White Tavera Canal—opening passage. ....	*836 42			836 42
Willow Cove. ....	1,796 97			1,796 97
Yarmouth Harbour. ....	*1,311 95			1,311 95
<i>Prince Edward Island.</i>				
Ballast Pier .....		385 54		385 54
Cumscapo Pier .....	3,837 25			3,837 25
Holby's Pier .....		388 99		388 99
Malpego .....		248 24		248 24
Murray Harbour .....		548 62		548 62
Five Mile Creek .....		200 55		200 55
New London Harbour .....	520 00	248 25		568 25
North Cardigan .....		21 21		21 21
Pinette .....	265 96			265 96
Souris, Knight's Point .....	6,605 18			6,605 18
Vernon River Pier .....	698 99			698 99
Victoria Pier .....		38 77		38 77
<i>New Brunswick.</i>				
Anderson's Hollow Breakwater, Rocher Bay .....	2,119 05			2,119 05
Beau Verte Ballast Pier. ....	4,981 84			4,981 84
Bellevue Village. ....	45 57			45 57
Cape Tormentine Breakwater. ....	4,744 43			4,744 43
Chatham .....	748 75			748 75
Cornwall Wharf .....	984 96			984 96
Bellevue Ballast Wharf .....	7,882 50			7,882 50
Grande Anse .....	559 62			559 62
Malbaco Harbour .....	2,998 16			2,998 16
S. John do (Negro Point Breakwater) ...	89 73			89 73
do do (Partridge Island) .....	880 53			880 53
S. John River—removal of snags. ....			250 00	250 00
do —River des Chutes to				
do Bear Island .....	\$ 917 24			
do —Bear Island and Fred- erickton .....	600 00			
Carried forward.....	\$1,517 24	1,162,919 33	210,539 94	261,839 63
				1,625,298 90

\*Amounts expended by Provincial Government between 1867 and 1879, and refunded to them by the Dominion. (O. C. No. 76,362, dated 7th April, 1887.)

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts	\$ cts.	\$ cts	\$ cts.
Brought forward .....	\$1,517 24	1,152,919 83	210,519 94	261,839 63
1,625,298 90				
<b>HARBOURS AND BREAKWATERS—Con.</b>				
<i>New Brunswick—Concluded.</i>				
St. John River—Fredericton and Wood- stock.....	415 87			
do —Above Grand Falls....	2,725 35			
	4,658 48			4,658 48
Upper Salmon River.....	2,855 00			2,855 00
Wilson's Beach.....	500 00			500 00
<b>HARBOURS GENERALLY, Maritime Provinces</b> .....			10,517 07	10,517 07
<i>Quebec.</i>				
Bagotville (St. Alphonse) Pier.....	216 98			216 98
Baie des Pères Pier, Upper Ottawa River.....	3,000 00			3,000 00
Baie St. Paul Pier.....		35 66		35 66
Beaufort Pier.....	54 75			54 75
Belœil Pier and Booms.....			82 00	82 00
Berthier ( <i>en haut</i> ).....	99 97			99 97
Cap de la Magdeleine.....	3,000 00			3,000 00
Carleton Pier.....	399 84			399 84
Cascades Pier.....	403 41			403 41
Chenal du Moine Ice Pier, at St. Anne de Sorel..	947 67			947 67
Coteau du Lac Pier.....	2,025 30			3,075 30
Flint's Wharf, Lake Mégantic.....		323 78		323 78
Harbours, &c., Generally.....			10,636 72	10,636 72
Ile aux Coudres Pier.....		249 94		249 94
Ile aux Goulards Breakwater—Étang du Nord...	6,642 40			6,642 40
Ile Perrot Pier.....	4,880 75			4,880 75
Ile Verte do.....	3,608 30			3,608 30
Kamouraska Pier.....	318 44			318 44
Laprairie Harbour.....	4,989 75			4,989 75
Les Éboulements Pier.....		189 24		189 24
L'Islet Pier.....		215 91		215 91
Long Sault Pier.....	800 00			800 00
Longueuil do.....	10,322 42			10,322 42
Malbaie do.....		28 18		28 18
New Carlisle do.....	1,405 06			1,405 06
Percé do.....	2,112 21			2,112 21
Piers below Quebec.....			641 21	641 21
Piopolis Wharf, Lake Mégantic.....		77 00		77 00
Port Daniel Pier.....	17,486 58			17,486 58
Quebec Harbour.....			80 35	80 35
do Queen's Wharf.....		632 63		632 63
Rivière au Lièvre.....	45,319 04			45,319 04
do du Loup ( <i>en bas</i> ) Pier.....	640 56	234 38		874 94
do Madawaska.....	783 65			783 65
do Nicolet, Harbour of Refuge.....	19,058 83			19,058 83
do Ouelle Pier.....		935 00		935 00
do Richelieu.....			60 00	60 00
do do —Ile Piers at Sorel.....	9,271 68			9,271 68
do Saguenay, Grande Décharge Lake St. John	118 78			118 78
do St. Anne de Beauséjour.....	1,187 13			1,187 13
do St. François.....	2,795 69			2,795 69
Carried forward.....	1,303,829 98	213,461 66	283,855 98	1,801,148 62

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward .....	1,303,829 98	213,461 66	283,856 96	1,801,148 62
<b>HARBOURS AND BREAKWATERS—Con.</b>				
<i>Quebec—Concluded.</i>				
Rivière St. Lawrence .....			228 25	228 25
do do Breaking ice between Sorel and Three Rivers .....			4,983 96	4,983 96
Rivière St. Lawrence, removal of chains and anchors .....	915 90			915 90
Rivière St. Lawrence, water levels .....			4,128 72	4,128 72
do St. Louis, deepening feeder .....	2,111 36			2,111 36
do Yamaska .....	3,664 42		507 97	4,172 39
Sts. Adelaide de Pabos (Little Pabos) .....	18 13			18 13
Sts. Anne du Saguenay Pier .....	2,100 00			2,100 00
St. François Pier (Île d'Orléans) .....	245 75			245 75
St. Irénée Pier .....	2,799 01			2,799 01
St. Laurent Pier (Île d'Orléans) .....	413 24			413 24
St. Michel Pier .....		821 02		821 02
Tadoussac Pier (Anse à l'Eau) .....		48 51		48 51
Three Rivers, Windmill Point, Ice Pier .....	1,650 52			1,650 52
Trois Pistoles Pier .....	363 29			363 29
Vandrevill Wharf (Government grant) .....	2,400 00			2,400 00
<i>Ontario.</i>				
Bayfield Harbour .....	13 82			13 82
Belleville do .....	7,351 04			7,351 04
Burlington Bay Channel .....		128 25	595 13	723 38
Chantry Island Breakwater .....	115 15			115 15
Cobourg Harbour .....	434 97			434 97
Collingwood Harbour .....	5,003 80			5,003 80
Coderich Harbour .....	1,699 54			1,699 54
Harbours Generally .....			10,858 43	10,858 43
Elton or Markdale, Lake Huron .....	6,996 31			6,996 31
Kaministiquia River .....	23,410 47			23,410 47
Kincardine Harbour .....	4,951 79			4,951 79
Kingston do .....	5,148 25			5,148 25
Kingsville do .....	2,394 26			2,394 26
Lake of the Woods (Government grant) dam across outlets .....	7,000 00			7,000 00
Little Current, Lake Huron .....	7,183 93			7,183 93
Little Nation River .....	3,010 14			3,010 14
Mattawan Pier .....	1,200 00			1,200 00
Midland Harbour .....	23,455 07			23,455 07
McGregor's Creek .....	4,548 08			4,548 08
Oakville Harbour .....	9,843 35			9,843 35
Owen Sound Harbour .....	1,032 50			1,032 50
Perry Sound do .....	200 00			200 00
Port Albert do .....	2,087 93			2,087 93
do Arthur Breakwater .....	56,509 51			56,509 51
do Arthur—Dredging .....	3,473 80			3,473 80
do Elgin Harbour .....	10,337 13			10,337 13
do Hope do .....	2,362 72			2,362 72
Portsmouth do .....	5,220 22			5,220 22
River Ottawa—Narrows above Pembroke .....	3,480 65			3,480 65
Rivière des Pêches .....	1,505 00			1,505 00
Rougeau Harbour .....	893 68			893 68
Carried forward .....	1,521,374 62	214,459 44	305,159 44	2,041,993 50

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward. ....	1,521,374 62	214,459 44	305,159 44	2,040,993 50
<b>HARBOURS AND BREAKWATERS—Concluded</b>				
<i>Ontario—Concluded.</i>				
Saugeen River Pier .....	3,419 00	.....	.....	3,419 00
Sault Ste. Marie.....	316 79	.....	.....	316 79
Shegulandah, Grand Manitoulin .....	311 66	.....	.....	311 66
Southampton Harbour.....	1,477 50	.....	.....	1,477 50
Thornbury do (dredging).....	2,497 75	.....	.....	2,497 75
Tolsma Bay, Cockburn Island.....	209 01	.....	.....	209 01
Toronto Harbour.....	19,880 94	.....	.....	19,880 94
<i>Manitoba.</i>				
Harbours Generally.....	.....	.....	3,637 83	3,637 83
<i>North-West Territories.</i>				
North Saskatchewan River.....	11,282 37	.....	.....	11,282 37
<i>British Columbia.</i>				
Cowichan River.....	1,490 94	.....	.....	1,490 94
Esquimalt Graving Dock.....	90,727 48	.....	6,342 63	97,070 11
Fraser River .....	9,997 92	.....	.....	9,997 92
Nanaimo Harbour—Removal of Nicol Rock.....	9,998 40	.....	.....	9,998 40
River Nicomeckel—Removal of snags.....	999 49	.....	.....	999 49
do Serpentine.....	942 75	.....	.....	942 75
do Somass.....	497 50	.....	.....	497 50
Victoria Harbour—"Dredger Rock".....	5,993 00	.....	.....	5,993 00
HARBOURS AND RIVERS GENERALLY.....	.....	.....	8,458 14	8,458 14
DREDGES.....	14,139 59	32,421 46	.....	46,561 05
<b>DREDGING.</b>				
<i>Nova Scotia.</i>				
Cheticamp .....	\$6,491 73			
Middle River, Pictou.....	1,082 19			
Pictou Harbour—				
Railway wharf, \$ 351 71 }	2,264 31			
Market do 2,272 60 }				
Port Hood .....	432 87			
Wallace .....	2,809 40			
Yarmouth Harbour.....	5,584 33			
	\$19,024 83			
<i>Prince Edward Island.</i>				
Tignish Harbour .....	4,388 20			
Carried forward.....	\$23,413 03	1,695,554 71	246,890 90	323,598 04
				2,265,033 65



## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward..... \$23,413 04	1,695,554 71	246,880 90	323,598 04	2,268,033 65
DREDGING—Concluded.				
New Brunswick.				
Belle Ile Point..... \$2,083 07				
Grand Lake..... 3,001 65				
Richibucto..... 1,447 35				
	6,532 07			
GENERALLY MARITIME PROVINCES..... 32 15				
Total, Maritime Provinces..... \$29,977 25				
Quebec.				
Chateauguay River..... \$3,214 78				
Gatineau do..... 1,645 22				
Laprairie Harbour..... \$1,990 00				
Papineauville Harbour..... 197 46				
Rivière du Loup (en bas).... 516 50				
do (en haut)..... 3,876 50				
River Richelieu..... 2,559 77				
do St. Francis..... 4,113 55				
do St. Maurice..... 1,000 00				
do Ste. Anne de la				
Pérade..... 635 00				
Valleyfield Harbour..... 615 30				
Generally..... 971 10				
	\$21,335 18			
Ontario.				
Cobourg Harbour..... \$ 662 00				
Goderich do..... 2,523 28				
Kincardine do..... 1,098 36				
Oakville do..... 4,147 50				
Port Elgin do..... 50 00				
Port Hope do..... 1,574 28				
Saugeen River..... 240 00				
South Nation River..... 670 44				
Generally..... 1,696 02				
	12,659 88			
Manitoba.				
Red River..... \$4,820 00				
White Mud River..... 1,841 17				
Generally..... 6,249 67				
	12,410 84			
British Columbia.				
Fraser River..... \$4,515 77				
Esquimalt Harbour..... 1,831 63				
Victoria do..... 8,646 81				
	14,994 21			
	91,377 36			91,377 36
DREDGING—GENERAL SERVICE.....			2,150 74	2,150 74
Carried forward.....	1,786,932 07	246,880 90	325,748 78	2,359,561 75

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	1,786,932 07	246,880 90	325,748 78	2,359,561 75
<b>SLIDES AND BOOMS.</b>				
Saguenay District slides .....	2,409 96	742 75	1,475 82	4,628 53
St. Maurice do .....		18,242 52	16,943 92	35,186 44
Ottawa do .....			20,374 54	20,374 54
Ottawa River slides .....	2,659 13	6,814 73		9,473 86
Gatineau do .....	400 00	2,818 24		3,018 24
Madawaska do .....	4,061 33	2,356 95		6,418 28
Ooulonge do .....	827 88	210 60		1,037 98
Black do .....	734 88	310 71		1,045 59
Petewawa do .....		3,409 34		3,409 34
Rivière du Loup ( <i>en haut</i> )—Improvements at Grande Chute .....	4,130 75			4,130 75
Newcastle District Works .....	1,845 50	2,707 92	2,935 61	6,089 03
<b>ROADS AND BRIDGES.</b>				
Dunnville Bridge, Grand River .....		353 73		353 73
Portage du Fort Bridge .....	2,301 28			2,301 28
Hamilton and Port Dover Road .....			243 20	243 20
Temiscouata Road .....		821 15		821 15
Des Joachims Bridge .....	774 08			774 08
Ottawa, Roadway to Dynamo House .....	9,409 36			9,409 36
do Cartier Square .....	860 57			860 57
do Chaudière Bridge .....		499 62		499 62
do Dufferin-Sappers Bridge .....		504 55		504 55
do Nepean Point .....			6 00	6 00
do St. Patrick Street .....			25 60	25 60
do Union Suspension Bridge .....		1,352 70		1,352 70
do Wellington Street .....	4,687 46			4,687 46
Red River Route .....			3 90	3 90
Battleford Bridge, Battle River, N.W.T. ....	97 56			97 56
Bow River do near Calgary, do .....	21,568 19			21,568 19
Elbow do do do .....	1,000 00			1,000 00
Moose Jaw Creek Bridge .....	300 00			300 00
<b>TELEGRAPH LINES.</b>				
<i>Nova Scotia.</i>				
Cape Sable .....	\$ 274 51			
Cheticamp .....	642 74			
Low Point .....	50 00			
Meat Cove .....	1,864 34	3,136 10		3,136 10
	\$ 2,832 19			
<i>Prince Edward Island.</i>				
Between Island and Mainland (subsidy) .....			1,946 66	1,946 66
<i>New Brunswick.</i>				
Bay of Fundy .....	\$1,187 20			
Escuminac .....	427 20			
	\$ 1,614 40			
Carried forward.....	\$ 4,446 59	1,847,635 60	287,826 41	368,804 03
				2,564,766 04

## APPENDIX No. 1.—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward. .... \$ 4,446 59	1,847,635 60	287,826 41	368,804 03	2,504,266 04
<b>TELEGRAPH LINES—Concluded.</b>				
<i>Newfoundland.</i>				
Anglo-American Co, subsidy Cape Ray line..... \$ 250 00				
<i>Quebec.</i>				
North Shore St. Lawrence, Quebec to Grosse Ile..... \$ 719 09				
North Shore St. Lawrence, toward Pointe aux Esqui- maux .....	4,616 24	.....	.....	4,616 24
Magdalen Islands .....	6,582 42			
Anticosti Island.. .....	2,503 00			
..... \$ 12,022 51				
LOWER ST. LAWRENCE AND MARITIME PROVINCES GENERALLY.....	5,817 86		22,536 96	22,536 96
<i>Ontario.</i>				
Bath and Amherst.....			29 24	29 24
Warton to Tobemory.....	5,800 00			5,800 00
<i>North-West Territory.</i>				
Battleford to Edmonton <i>via</i> Fort Pitt.....	15,608 74			15,608 74
Battleford to Humbolt.....	12,759 54			12,759 54
Humbolt to Qu'Appelle.....	5,525 20			5,525 20
Clark's Crossing to Prince Albert, Stobart and Batoche.....	6 50			6 50
Telegraph lines generally.....			23,264 93	23,264 93
<i>British Columbia.</i>				
Australian Rancho to Barkerville.....	833 29			833 29
Telegraph lines generally.....			100 00	100 00
TELEGRAPH SERVICE GENERALLY.....			10,064 65	10,064 65
<b>BEACONS AND BUOYS.</b>				
Joggins River—Placing Buoya..... \$ 62 00				
Jordan Harbor—Beacon on Reef.....	300 00			
Lockport—Placing Buoya.....	261 97			
Victoria Bridge—do .....	127 09			
..... \$ 751 06				
Carried forward.....	1,892,585 11	287,826 41	425,550 87	2,605,962 39

\*Amount expended by Provincial Government of Nova Scotia between 1867 and 1879, and re-  
funded to them by the Dominion. (O. O. No. 76,362, dated 7th April, 1887).

APPENDIX No. 1—*Concluded.*

Name of Work.	Con- struction.	Repairs.	Staff and Maintenance	Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	1,892,585 11	287,826 41	425,550 87	2,605,962 39
<b>MISCELLANEOUS.</b>				
Surveys and Inspections .....			25,556 90	25,556 90
Arbitrations and Awards ..... \$3,329 78				
do do Widow F. H. ....				
Basis, award and costs... .. 6,515 38			9,845 16	9,845 16
Agent and Contingencies, B. Columbia.....			4,438 92	4,438 92
<b>Sundries :—</b>				
S. McLaughlin—Annual Allowance				
as Photographer. .... \$ 400 00				
Widow Thos. Lambkin—Gratuity... 90 00				
E. V. Bodwell—Services as Ac- 2,200 00				
countant, Victoria, B.C.....				
J. W. McKeen—Telegraph Opera- 190 00				
tor, N. W. T.—Loss of time and				
health during Rebellion .....				
Michael Welsh—Gratuity 2 months' 180 00				
salary of his late son, James Walsh				
Extra Clerks—Preparing Returns 458 80			3,428 80	3,428 80
for Parliament.....				
Totals.....	1,892,585 11	287,826 41	468,820 65	2,649,232 17
<b>WORKS AUTHORIZED BY SPECIAL ACTS OF PARLIAMENT.</b>				
River St. Lawrence—Deepening between Quebec 195,000 00				195,000 00
and Montreal.....	418,710 83			418,710 83
Quebec Harbour Improvement .....	166,000 00			166,000 00
Levis Graving Dock.....				
Totals.....	779,710 83			779,710 83
Grand Totals.....	2,672,295 94	287,826 41	468,820 65	3,428,943 00

O. DIONNE,  
Accountant.

PUBLIC WORKS DEPARTMENT,  
OTTAWA, 20th November, 1888.

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APPENDIX No. 2.

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**REPORT**  
**ON**  
**PUBLIC BUILDINGS**  
**THROUGHOUT THE DOMINION,**  
**FOR THE FISCAL YEAR ENDED 30th June, 1888.**  
**BY**  
**THOS. FULLER, CHIEF ARCHITECT.**

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## APPENDIX No. 2.

### REPORT OF THE CHIEF ARCHITECT.

Ref. No. 92,334.

CHIEF ARCHITECT'S OFFICE,  
OTTAWA, 22nd October, 1888.

SIR,—I have the honor to transmit herewith the annual report on public buildings and works under my charge, for the fiscal year ended 30th June, 1888.

I have the honor to be, Sir,

Your obedient servant,

THOMAS FULLER,  
*Chief Architect.*

A. GOBAIL, Esq.,  
Secretary Department Public Works, Ottawa.

### PROVINCE OF PRINCE EDWARD ISLAND.

#### CHARLOTTETOWN.

##### DOMINION BUILDING.

Sundry repairs to furniture and windows were effected; and the grounds were graded.

#### MONTAGUE.

##### POST OFFICE.

The fencing has been completed, but only a portion of the grading and foot-paths has been done, as the work was abandoned by the contractor before completion.

Plans, &c, prepared by this Department.  
Superintending Architects, Messrs. Stirling & Harris.  
Contractor, Mr. L. A. Wilmot.

### PROVINCE OF NOVA SCOTIA.

#### AMHERST.

##### PUBLIC BUILDING.

The property was fenced; storm sashes for the windows were supplied; and minor repairs made under the supervision of this Department.

Clerk of works, Mr. Jno. E. Turnbull.

#### BADDECK.

##### POST OFFICE, &c, BUILDING.

A wooden out-house to be used as a coal store was erected; a quantity of grading was carried out; the drain covered; and some fittings and a flagstaff supplied.

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## HALIFAX.

### EXAMINING WAREHOUSE.

The felt and gravel roof covering, sky lights, parapets and flashings were renewed, and some general repairs, &c., made to building.

Clerk of works, Mr. Jno. E. Turnbull.

### IMMIGRATION OFFICE.

Some necessary repairs have been executed, and a few articles of office furniture supplied.

### QUARANTINE STATION, LAWLOR ISLAND.

The woodwork of the various buildings was thoroughly repaired and painted; a new kitchen was built; new drains were put in; cellars were floored; and the Surgeon's Office was fitted up and furnished.

Clerk of works, Mr. Jno. E. Turnbull.

Contractor, Mr. Samuel Brookfield.

## NEW GLASGOW.

### PUBLIC BUILDING.

The tubes of the hot water boiler had to be renewed owing to corrosion from the local water; a safe was supplied to the Custom House; and some minor repairs effected.

## NORTH SYDNEY.

### PUBLIC BUILDING.

The building which was described in a previous report was completed, fitted up, furnished and occupied.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. Chas. P. Moffat.

Contractors for construction of building and for office fittings, Messrs. Maedonald, Treen & Henderson.

Contractors for furniture, Messrs. W. H. Moore & Co.

Contractors for heating apparatus, The Truro Manufacturing Co.

## PICTOU.

### CUSTOM HOUSE.

On 18th October last a contract was entered into with Mr. C. B. Thompson, of New Glasgow, for the construction of a hot water heating apparatus, which has been fitted up and completed.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. W. J. Lorrain.

### MARINE HOSPITAL.

A contract was entered into with Messrs. Muirhead & Co., of Halifax, on the 11th October last, for the construction of a hot water heating apparatus, which has been fitted up and completed.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. W. J. Lorrain.

## WINDSOR.

### POST OFFICE BUILDING.

The drains were repaired, cleaned and put in order; storm sashes were supplied to all windows on ground and first floors; some additions to the heating apparatus



were made ; some additional office fittings were supplied, and sundry general repairs made ; all executed under the supervision of this Department.

Clerk of Works, Mr. Jno. E. Turnbull.

### YARMOUTH.

#### PUBLIC BUILDING.

Fittings, furniture and carpets for the various offices were supplied, and asphalt sidewalks were laid down along the street fronts of the building.

Plans, &c., prepared by this Department.

Clerk of Works, Mr. J. B. Kinney.

Contractor for furniture, Mr. J. R. Wyman.

Contractor for sidewalks, Mr. Jas. Sykes.

### PROVINCE OF NEW BRUNSWICK.

#### BATHURST.

##### POST OFFICE &C., BUILDING.

Building fitted up, furnished and occupied. During the fiscal year the property was fenced on two sides ; sidewalks put down on the street frontages, and the yard, &c., graded.

Clerk of Works, Mr. Henry White.

#### CARLETON.

##### POST OFFICE.

Roof covering, eave troughs and down-pipes were repaired, and a contract was entered into with D. W. Clark & Son for supplying the building with electric light.

Works carried out under the supervision of Mr. W. J. McCordock.

#### CHATHAM.

##### POST OFFICE, &C., BUILDING.

The front and sides of roof of wing were re-slatted and the roof generally repaired.

Clerk of Works, Mr. Jno. E. Turnbull.

#### CHATHAM (MIDDLE ISLAND).

##### QUARANTINE.

Repairs were made to the caretaker's house ; chimneys, porches and privies built for the hospitals ; various general repairs were made ; one of the hospitals was raised out of reach of spring floods, and raised pathways made between the dwellings and hospitals.

Clerk of Works, Mr. Jno. E. Turnbull.

#### DALHOUSIE.

##### POST OFFICE, &C., BUILDING.

A site, being part of lot 45 having a frontage of 98 feet on William street by 80 feet in depth, was acquired ; plans, &c., were prepared, tenders invited, and the contract for the construction of the building awarded.

The building is to be of stone, with wooden roof, floors and partitions, and metal roof covering. There is to be a two and a-half story main building, 38 feet by 29 feet ; the ground floor for the Post Office ; the first floor for the Customs ; the attic for the caretaker's apartments ; and the basement for the furnace, fuel, &c. In the rear is to be a one-story Examining Warehouse, 28 feet by 15 feet, with a one-story W. C. adjoining.

Plans, &c., prepared and work to be superintended by this Department.

Clerk of Works, Mr. J. C. Barberie.

**DORCHESTER.****MARITIME PENITENTIARY.**

During the year 117 ordinary cell doors were made, 81 of which were hung, and 81 locks made and fitted in places, exclusive of 8 doors made and placed for the 4 hospital cells. Parts of various machines were renewed and repaired at the machine shop.

The tank houses were repaired and painted.

Repairs were made to prison porches, coal shoots and shutters of boiler house, plastering of prison building as well as a large quantity of general jobbing.

Plans prepared and work executed under the supervision of this Department.

Resident Clerk of Works, Mr. John E. Turnbull.

**FREDERICTON.**

Asphalt sidewalks with chain stones were laid down. The Post Office and Custom House were supplied with gas fittings. The Weights and Measures Office was fitted up; a flag pole was fitted up, and some general repairs effected.

Superintendent, Mr. G. E. Fairweather, Architect.

Clerk of Works, Mr. F. S. Hilyard.

**KINGSTON (KENT).****RICHIBUCTO MARINE HOSPITAL.**

Some further renewals and repairs, in addition to those mentioned in my report of last year, were done to the Hospital buildings under the supervision of Mr. R. Hutcheson.

**MONCTON.****POST OFFICE.**

Alterations were made in the public lobby porch and doors, and some repairs executed.

Clerk of Works, Mr. John E. Turnbull.

**NEWCASTLE.****PUBLIC BUILDING.**

A tube well with necessary piping, fittings, &c., was put in to provide a water supply for the building; an asphalt sidewalk was put down on the streets where they adjoin the building; the yard was paved with cedar blocks; storm sashes were provided for all windows, and sundry repairs and painting executed.

Works executed under the superintendence of this Department.

Clerk of Works, Mr. John E. Turnbull.

**PORTLAND.****POST OFFICE.**

Some general repairs to the building were executed under the supervision of Mr. W. J. McCordock.

**ST. JOHN.****CUSTOM HOUSE.**

The roof covering over south wing and the middle of west wing was renewed.

The exterior iron work of the building was repainted.

The Customs offices with the halls and corridors, and also the offices of the Immigration Agent, were cleaned, the walls and ceilings calsomined and painted, woodwork grained and varnished, and the hardwood shellacked and varnished.

Changes were made in the basement to allow of the teams to drive into the coal vaults from Water street instead of depositing the coal on Prince William street and running it down through shoots, necessitating handling several times.

Work executed under the supervision of Mr. W. J. McCordock.

#### MARINE HOSPITAL.

Temporary repairs were made to the roof; and a small extension of the heating apparatus, under the supervision of Mr. W. J. McCordock.

#### POST OFFICE.

An office for postal matter "in Bond" was fitted up and furnished on the Mes-  
sine below the ground floor; iron gratings were placed over the windows of lower and upper basements, and an iron handrail placed outside the building.

Works carried out under the supervision of Mr. W. J. McCordock.

#### SAVINGS BANK.

Cleaning, repairs and painting were done to the ceilings, walls, woodwork and ironwork throughout the building; and the heating and the roof covering were repaired.

Executed under the supervision of Mr. W. J. McCordock.

#### ST. STEPHEN.

##### PUBLIC BUILDING.

A safe, and the furniture and carpets for the Post Office and Custom House were supplied, and the plumbing and gas fixtures were put in.

Clerk of Works, Mr. D. F. Maxwell.

#### WOODSTOCK.

##### POST OFFICE, CUSTOM HOUSE, &c.

During the fiscal year 1887-8, some carpets were supplied, and minor repairs executed.

### PROVINCE OF QUEBEC.

#### AYLMER.

##### POST OFFICE.

Cadastral Lot 759, south side of Main street, was acquired for a site, and a contract for the construction of the building was entered into on 28th May last.

The building is to be 2½ stories, 39 feet by 29 feet, of brick walls with stone dressings and foundations, and wooden floors, partitions and roof; in the rear is to be a wooden annex, 24 feet by 20 feet.

Plans, specifications, &c., prepared and the works being carried out under the supervision of this Department.

Clerk of Works, Mr. F. Symmes.

Contractor, Mr. D. B. McDonald.

#### CHICOUTIMI.

##### MARINE HOSPITAL.

The interior of the covered way was finished and sundry repairs to the building generally were effected.

## COATICOOK.

### PUBLIC BUILDING.

During the previous year a site was secured on the corner of Maria and Cutting streets, and on the 23rd January last a contract was entered into for the construction of this building to accommodate the Post Office, Customs and Inland Revenue Offices. The building will consist of a 2½ story main building, 41 feet by 56 feet, and a one story annex 42 feet 6 inches by 20 feet. The walls are to be of brick with stone dressings and on stone foundations, the roofs, floors and partitions of wood and the roof covering of galvanized iron. The basement of the main building is to be for heating furnace and fuel; the ground floor of the main building for the Post Office and of the annex for Examining Warehouse and Weights and Measures; the first floor to be the Customs and Inland Revenue Offices; and the attic for the caretaker's apartments. There are to be 3 brick vaults, one on the ground and two on the first floor.

Plans and specifications prepared and work supervised by this Department.

Clerk of Works, Mr. Wright Sleeper.

Contractor, Mr. F. F. Shurtliff.

## GROSSE ISLE.

### QUARANTINE STATION.

Under contract with Mr. Geo. Beaucage general repairs were made to the Quarantine building; and the plastering of the brick hospital, destroyed by frost, was renewed.

Plans, &c., prepared and work supervised by this Department.

## HULL.

### POST OFFICE.

This building was completed, fitted up, furnished and provided with a hot water heating apparatus.

Plans, &c., prepared and works superintended by this Department.

Clerk of Works, Mr. D. C. Simon.

Contractor for construction of building and fittings, Mr. Wm. Stuart.

Contractors for heating apparatus, Messrs. Garth & Co.

## JOLIETTE.

### POST OFFICE, &c. BUILDING.

On the 6th October last, a site on Notre Dame street, being south western ½ of lot No. 304 and having a frontage of 92 feet by a depth of about 180 feet, was purchased; a contract for the construction of the building was entered into on 20th April, and the works are now in progress.

The building will consist of a 2½ story main building 34 feet by 50 feet, of brick with stone dressings and foundations, to be occupied as a Post Office and Inland Revenue Offices, and a one story brick annex 17 feet by 31 feet for an Examining Warehouse. The floors, partitions and roofs are to be of wood; the roof covering of galvanized iron.

Plans, &c., prepared and work carried out under the supervision of this Department.

Clerk of Works, Mr. A. Durand.

Contractor, Mr. Geo. Beaucage.

## MARIA.

### INDIAN MISSION.

Sundry repairs were effected to the Roman Catholic Chapel under the supervision of the Rev. J. Gagné.

## MONTREAL.

### ARMORIES.

The fittings for the various armories and the furnishings for the offices are being supplied.

Plans, &c., prepared, and work superintended by Mr. A. Raza, Architect.

Clerk of Works, Mr. Geo. Bowie.

Contractor for fittings, Messrs. J. B. St. Louis Bros.

### CUSTOM HOUSE.

Extensive changes were made in long room fittings, due to a change in mode of collecting Customs revenue, and an unfinished room was fitted up as a record room.

Resident Architect, Mr. Jas. Nelson.

### EXAMINING WAREHOUSE.

Sundry repairs to roof were effected.

Resident Architect, Mr. Jas. Nelson.

### POST OFFICE.

The Money Order and Registered Offices were enlarged and altered, and new fittings and furniture provided; an office at the foot of the main stairs was fitted up and furnished for the use of the Customs postal matter; a gallery for clothes presses was erected in the ground floor story; a fire and burglar proof safe was supplied the Postmaster's office; some additions were made to heating and plumbing, and some general repairs effected to woodwork.

Resident Architect, Mr. Jas. Nelson.

Clerk of Works, Mr. Geo. Bowie.

## QUEBEC.

### CITADEL BUILDINGS.

The usual and ordinary repairs, alterations, furnishing, &c., at His Excellency's quarters were carried out under the supervision of this Department.

### CITADEL CLIFF.

A further quantity of shale, liable to endanger life and damage property, was removed.

### CUSTOM HOUSE.

Extensive repairs were effected in the basement floor; the plumbing was in great part renewed, and a new well put in under the supervision of this Department.

Local Architect, Mr. J. F. Peachy.

### QUEEN'S WHARF BUILDINGS.

General repairs were effected to Forge and Queen's Stores.

Local Architect, Mr. J. F. Peachy.

Contractor, Mr. Ferd. Poitras.

### DRILL HALL.

Building completed.

Plans, &c., prepared and work superintended by Mr. E. E. Taché, Architect, Quebec, P. Q.

Clerk of Works, Mr. W. J. Peters.

### OBSERVATORY.

Repairs to roof of Observatory and some general repairs to residence were effected.

## IMMIGRANT BUILDING.

This building, which was described in last year's report, was completed and handed over to the Department of Agriculture on 28th June, 1888.

Plans, specifications, &c., prepared by this Department.

Local Architect, Mr. J. F. Peachy.

Clerk of Works, Mr. Jos. Garneau.

Contractor, Mr. Alf. Lortie.

## POST OFFICE.

The roof, chimney tops and water closets were repaired, and the drainage put in working order.

## STE. ANNE DE RESTIGOUCHE.

## INDIAN MISSION.

Sundry repairs were executed to the mission buildings under the supervision of Rev. Monsignor Guay.

## ST. JEROME.

## PUBLIC BUILDING.

On 27th January a contract was entered into for the construction of this building on Cadastral Lot No. 219, on Main street. The walls are to be brick with stone dressings and stone foundations, and the floors, partitions and roof of wood. There is to be a main building 30 feet by 56 feet, two stories, basement and attic, with a two story porch in front 18 feet by 8 feet, and a one story annex in the rear 33 feet by 21 feet. There are to be brick vaults, two on the ground floor and one on first floor.

The ground floor of the main building is to be occupied by the Post Office and the Custom House, and the annex by the Examining Warehouse and Weights and Measures offices; the first floor by caretaker and offices; the attic to remain unfinished for the present.

Plans and specifications prepared and work supervised by this Department.

Clerk of Works, Mr. J. Matte.

Contractor, Mr. Joseph Fitzpatrick.

## ST. VINCENT DE PAUL.

## PENITENTIARY.

The following works were carried out principally by convict labor:—

*Boiler House and Engine Room.*—A cut stone boiler house 40 feet by 40 feet and 23 feet high, with ceiling of rolled girders and brick arches, was erected and completed by convict labor.

*Steam Heating.*—The steam piping and boiler for the dormitories and keeper's hall were completed; the boilers having been supplied by contract and the remaining work by convict labor.

*Hot water Heating.*—The residences of the Warden and the Deputy Warden have been furnished with hot water heating apparatus by contract.

*Warden's Residence.*—This building was renovated inside and outside, papered inside, and a 9 inch drain pipe, 33 yards in length, carried from the house to the river.

*Deputy Warden's Residence.*—All rooms were re-papered and all woodwork painted three coats.

*Ice House.*—A strongly framed one story wooden building on a stone foundation 36 feet by 24 feet, clapboarded externally and sheathed with 1 inch boards inside, the roof covered with galvanized iron, has been erected in the prison yard.

**Bridge to Quarry.**—The entire superstructure, 500 feet in length, was renewed, and 2,000 new ties laid on tramway.

**Keeper's Hall.**—Basement and ground floor have been laid in dressed stone flagging; the basement has been divided by a brick partition, 2 feet thick, 60 feet long, and 12 feet high; in the hall proper, two galleries have been carried around the inside of the hall, floored with oak, resting on cantilevers, and reached by four flights of iron staircases; and the ceiling of the hall has been lathed, plastered and covered with 1 inch matched battens, oiled and varnished.

**Lumber Shed.**—A wooden building, 130 feet by 20 feet and 12 feet high, was erected for storage of sawn lumber.

**Baker's Oven.**—A large oven was built.

**Kitchen and Laundry.**—Through a change in regulation the dining room was done away with, and the space thus gained was added to the kitchen and laundry, and floored with dressed flagging laid in Portland cement.

**The East Dormitory Cells** were taken down and the space fitted up as a steam drying closet for the laundry. The kitchen was supplied by contract with five steam jacket copper kettles connected with one of the steam boilers.

**Workshops.**—The tailor, tinmiths' and shoemaker shops were fitted up with benches, platforms, &c., and four additional windows were put in.

**Boiler House Smoke Stack.**—A smoke stack, 6 feet 10 inches in diameter, was constructed; carried up 60 feet above roof

New Cut Stone Steps were built to the three entrances of workshop, and to the entrance of the Catholic chapel.

Five of the workshops' windows were grated.

750 bushels of lime were burned.

7,978 feet of dressed flagging and 10,629 feet of ashlar were prepared for the west dormitory.

In addition to the above a large quantity of general repairs, such as painting, woodwork and roofs, and pointing walls, were done to the various buildings.

Plans, &c., prepared by this Department.

Superintending Architect, Mr. John Bowes.

Contractor for heating apparatus, Warden and Deputy Warden's residences, and for the steam cooking apparatus, Mr. E. Chanteloup.

## ST. REGIS.

### CUSTOM HOUSE.

Winter sashes were provided and repairs to woodwork and chimney tops were effected.

## SHERBROOKE.

### PUBLIC BUILDING.

The roof was repaired, a portion of the bandroom was partitioned off; a new lamp-post in front of the building was fitted up, and some few ordinary repairs effected.

## SOREL.

### PUBLIC BUILDING.

A striking and illuminated clock with four dials has been placed in the tower by Mr. E. Chanteloup.

## THREE RIVERS.

### CUSTOM HOUSE.

A hot water heating apparatus was fitted up in the building; some fittings, &c. were supplied to the Excise Offices, and general repairs effected.

Plans, &c., prepared by this Department.  
 Resident Architect, Mr. O. Z. Hamel.  
 Contractors for heating apparatus, Messrs. Drapeau & Savignac.

### THREE RIVERS.

#### POST OFFICE.

The drainage has been altered and extended; and a new hot water furnace with additional piping and radiators put in.  
 Superintending Architect, Mr. O. Z. Hamel.  
 Contractors for heating apparatus, Messrs. Garth & Co.

## PROVINCE OF ONTARIO.

### AMHERSTBURG.

Some alterations of heating apparatus and a few ordinary repairs were effected.

### BARRIE.

#### POST OFFICE, &C.

A stone enclosure wall was built; block pavement sidewalks were laid down on the street line; and some fittings and furniture were supplied under the supervision of Messrs. Kennedy, Gaviller & Holland, Architects.  
 Contractor for fence wall, Mr. Jos. Armstrong.

### BELLEVILLE.

#### POST OFFICE.

A flag pole was furnished; and ordinary repairs were effected to plumbing, &c.

### BERLIN.

#### POST OFFICE, &C., BUILDING.

A new tile drain was put in, the caretaker's apartments were cleaned, and a few repairs were executed.

### BRAMPTON.

#### POST OFFICE PUBLIC BUILDING.

A corner lot with a frontage of 48 feet on Queen street, frontage 90 feet on Hannah Street, and a frontage of 38 feet on a lane in the rear was obtained as a site for a public building, for which plans, &c., are in course of preparation.

### BROCKVILLE.

#### POST OFFICE, &C., BUILDING.

A granolithic sidewalk was laid in front of the building, and ventilators were placed in the basement.

### CAYUGA.

#### POST OFFICE.

A site was obtained on the corner of King and Cayuga streets with frontages of 45 and 80 feet; and on 23rd November last a contract was entered into for the construction of a Post Office building. When completed it will consist of a two story main building with basement and attic 38 feet 6 inches by 25 feet, and a one story



annex 25 feet by 23 feet exclusive of a brick one story vault 7 feet 9 inches by 6 feet. The walls are to be of brick with stone dressing, and on a stone foundation, the floors and roofs of wood.

In the rear is to be a detached water closet of brick on a stone foundation.

Plans, &c., prepared and work supervised by this Department.

Contractors, Messrs. Draper Bros.

### CHATHAM.

POST OFFICE, &c., BUILDING.

Ordinary repairs were effected.

### COBOURG.

[POST OFFICE, CUSTOM HOUSE, &c.]

Entrance door to upstairs was changed into a window; the staircase was taken down and the stairway hall converted into a room for the Postmaster; and some alterations were made to the Post Office fittings.

Plans, &c., prepared by this Department.

Contractor, Mr. Wm. Battell.

### CORNWALL.

POST OFFICE, &c., BUILDING.

A striking clock with four illuminated dials has been placed in the tower of the building; four dormers were made in the tower for ventilation, and the clock room floored.

Plans, &c., prepared by this Department.

Contractors for clock, Messrs. Milliken & Wagner.

### GALT.

PUBLIC BUILDING.

Granolithic pavement was laid down along the street line of the building by Mr. Robt Forsyth.

### GANANOQUE.

POST OFFICE.

The Town Corporation having granted a site on the corner of Pine and Stone streets, plans, &c., were prepared, and on 5th December last, a contract for the construction of the building was entered into.

There will be a 2½ story main building 38 feet by 25 feet, and a one story annex 25 feet by 25 feet, exclusive of a brick vault 7 feet 9 inches by 6 feet. The basement is to be for heating furnace, &c., the ground floor for the post office, and the first floor for the caretaker's apartments. The walls are to be brick, with stone dressing and stone foundations; the roof, floors and partitions of wood; and the roof covering of galvanized iron.

Plans, &c., prepared and work superintended by this Department.

Clerk of Works, Mr. R. Brough.

Contractor, Mr. Geo. Wilson.

### GUELPH.

POST OFFICE.

Some cleaning and general repairs were effected.

### HAMILTON.

DRILL SHED.

The construction of this building which was described in my report for 1886-87, has since been carried on, and is now nearly completed. Drawings and specifications

for construction of building prepared by Mr. H. James, Architect, Department of Militia.

Superintending Architect, Mr. C. W. Mulligan.

Clerk of Works, Mr. Wm. Casey.

Contractor, Mr. M. A. Pigott.

#### POST OFFICE, &c.

Alterations and additions to the heating apparatus were made, and some additional fittings and furniture supplied.

Contractor for changes and additions, heating apparatus, Mr. Adam Clarke.

#### KINGSTON.

##### PENITENTIARY.

The following works were executed by this Department:—

*Pipe duct.*—A stone pipe duct, 80 feet long by 5 feet high by 2 feet 3 inches wide, inside, with stone flagging cover, was built from the kitchen boiler house to the main sewer, to carry the suction pipe of pump.

*Baths.*—12 wooden baths were replaced by 12 others of iron, new oak divisions were put in, the flooring was finished in cement, new entrance doors were provided, and the woodwork painted.

*Asylum Recreation Grounds.*—A yard 47 feet by 24 feet on the west side of the Asylum was enclosed by a wall 8 feet in height of dressed stone laid in cement and capped with cut stone.

*Wash House.*—New joisting and flooring throughout were laid; a new roof covered with galvanized iron was constructed; new ceiling of 1 inch pine battens has been put on; galvanized iron ventiducts and ventilation to carry off vapors were put in soap-boiling room, and the stands, tables and desks replaced by new ones.

In the south end of the wash house a steam drying room was fitted up.

*Barns.*—The roofs of the two barns were recovered with galvanized iron, repairs were made to stable No. 3, and the floors of stable No. 1 renewed.

*Dining Hall.*—The jointing of flagging and inside stone wall was raked out and filled with Portland cement; the ceilings and upper part of inside of walls were calsomined, and the woodwork and ironwork painted. A stone table was constructed in the meat cellar.

*Warden and Deputy Warden's Quarters.*—These were generally repaired. Two out stone chimney shafts were built to the latter; the exterior face of the walls was pointed in Portland cement; all woodwork was painted, and the outbuildings of the Deputy Warden's quarters re-roofed and covered with galvanized iron.

*Ice House.*—Four trussed roof principals were put in; the roof was covered with galvanized iron; the woodwork painted, and the walls pointed with cement.

*Female Prison.*—The ground floor wooden supports were replaced by 6 stone piers; the stone stairway leading from the ground floor to the dungeons were removed; the Matron's quarters were altered, renovated and fitted with a chimney piece, and the ceiling recovered with pine sheathing, furnished with ventilators and painted.

*Workshops.*—The floor of the north wing, south workshops, was strengthened by heavy iron girders; and on the first floor two store rooms were fitted up for supplies.

The woodwork of the south and east workshops was painted; the exterior of the walls pointed in cement and the buildings generally repaired. The east workshop wood flooring and stone flagging were renewed and two portions partitioned off for chief keeper's office and foreman painter's room.

*Kitchen Area Wall.*—This was taken down and rebuilt.

*Keeper's Hall.*—The floor has been laid in oak.

*Pork Packing House.*—The position of the doors was changed and a wall built to form a passage between the west and cellar doors.

**Water Service Tower.**—It is intended to build this of cut stone on the highest part of the grounds about one half a mile from the prison. It will be 36 feet square and 65 feet high. The foundation walls are built and the greater part of the cut stone prepared.

**Quarry Tramway.**—Stone cars were repaired and about 200 ties relaid.

**Gas Works.**—Materials for an additional generator, a superheater and a purifier were supplied.

**Flooring.**—The flooring of the dormitory galleries and of 140 cells in Block A were relaid with 2-inch oak.

**Asylum and Lodges.**—The outside walls were pointed with cement and the roofs and woodwork painted.

Repairs to woodwork, stonework and pointing were effected at the various buildings.

A quantity of cut stone for the extension of the boundary wall on east side of gas house was prepared and laid on the site.

Superintending Architect, Mr. John Bowes.

## LINDSAY.

### POST OFFICE, CUSTOMS AND INLAND REVENUE OFFICES.

The site known as the Episcopal Church property having 66 feet frontage, by a depth of 196 feet, and a lane 15 feet wide in the rear was obtained; drawings and specifications for a Public Building were prepared and the contract for construction awarded.

The building is to be brick walls with stone dressings and on a stone foundation. There is to be a main building 55 feet 6 inches by 47 feet, two stories, attic and basement. A clock tower of four stories and basement, and a one story annex 57 feet by 23 feet. The ground floor of the main building is for the Post Office; the first floor is for the Customs and Exchequer Offices; in the attic are to be the caretaker's apartments; while in the annex are to be the Examining Warehouse and the Weights and Measures and Gas Inspector's offices.

Plans and specifications prepared by this Department.

Clerk of Works, Mr. H. Walters.

Contractor, Mr. P. Navin.

## LONDON.

### CUSTOM HOUSE ENLARGEMENT.

The building has been completed, fitted up and occupied.

Architects, Messrs. Durand & Moore.

Clerk of Works, Mr. John Overell.

Contractor for building, Mr. F. Toma.

Contractor for heating apparatus, Mr. W. J. Burroughs.

### INFANTRY SCHOOL.

This building which was described in my report of last year has been completed and occupied.

Plans and specifications prepared by Mr. H. James, Architect, Department of Militia and Defence.

Superintending Architects, Messrs. Durand & Moore, London, Ont, who also prepared the plans and specification for the heating apparatus.

Clerk of Works, Mr. C. F. Cox.

Contractors for the erection of the building, Messrs. Hook & Toll.

Contractors for heating apparatus, Messrs. Maguire & Bird.

## NAPANEE.

### POST OFFICE AND CUSTOM HOUSE.

Lot No. 5 on the east side of John street having been acquired for a site during the previous year, plans, &c., were prepared and a contract for the construction of a public building entered into on the 25th January last, and the works are now in progress.

The walls are to be stone, the partitions, floors and roofs wood, and the roof covering of galvanized iron. There is to be a main building 48 by 58 feet, of two stories, besides attic and basement, the basement to contain the heating apparatus, fuel, &c., the ground floor to contain the Post Office, the first floor the Customs and Inland Revenue Offices, and the attic the caretaker's apartments; and in the rear a one story annex 21 feet by 46 feet, for Examining Warehouse, Weights and Measures and Gas Inspector's Office. There are to be vaults on ground and first floors. On the street corner is an octagonal clock tower 50 feet in height from ground level to top of roof, or 90 feet to top of finial.

Plans, &c., prepared and works supervised by this Department.

Resident Architect, Mr. Bartlett.

Clerk of Works, Mr. J. E. Herring, Napanee.

Contractor, Mr. Geo. Newlands, Kingston, Ont.

## ORANGEVILLE.

### POST OFFICE.

A fire proof safe was supplied.

## OTTAWA.

### PRINTING BUREAU.

This building which was described in my annual report for 1886-87 is in progress, and is expected to be completed by the close of fiscal year 1888-89.

Plans and specifications prepared and work supervised by this Department.

Superintending Architect, Mr. J. P. M. Lecourt.

Clerk of Works, Mr. H. L. Pinard.

Contractor, Mr. John E. Askwith.

### NEW DEPARTMENTAL BUILDINGS, WELLINGTON STREET.

Drawings and specifications for iron staircases and for a hot water heating apparatus have been prepared; tenders for the iron staircases have been invited and those for the heating apparatus are to be advertised for at an early date.

Plans, &c., prepared and work superintended by this Department.

Clerk of Works, Mr. Samuel Adams.

Contractor for construction of building, Mr. A. Charlebois.

### PARLIAMENT BUILDING.

Alterations were made at the apartments of the Speaker, House of Commons; a new bedroom was fitted up for him on the first floor, a new stairway built from basement to first floor; a watercloset and bath put in and the entire suite painted, repaired and papered.

Usual and ordinary repairs were effected, and furniture and fittings supplied to the building generally.

Work executed under the supervision of this Department.

### EASTERN AND WESTERN BLOCK, DEPARTMENTAL BUILDINGS.

Essential repairs, cleaning, distempering, furnishing and fittings were executed and supplied under the supervision of this Department.

## VICTORIA HALL.

This building, which had previously been rented for the display of the Canadian Fisheries Exhibit, was purchased, and the upper portion was altered and fitted up to accommodate the Canadian Art Gallery pictures, which were then removed there from the Supreme Court building; the Fisheries Exhibit being retained in the ground floor of the building.

Plans, &c., prepared by this Department.

Clerk of Works, Mr. H. L. Pinard.

## PUBLIC BUILDINGS, REPAIRING STREETS, &amp;c.

Bank street between Wellington and Vittoria streets, and Besserer street from Little Sussex street to the Canal Basin were macadamized.

Repairs were made to Mounted Police roadway, Nepean Point roadway, Major's Hill roadway, roadway west side of Locks, St. Patrick's Street, Cartier Square, and St. Patrick's Street sidewalks were repaired.

The various roadways, sidewalks and footpaths were kept clear of snow during the winter.

## PARLIAMENT GROUNDS.

These were maintained efficiently.

## MAJOR'S HILL PARK.

Further improvements have been carried on during the fiscal year, and the grounds have been kept in good order.

## GEOLOGICAL MUSEUM.

Additional office room being required, an unfinished attic storey in an adjoining building was leased, divided up and finished as offices.

## CENTRAL EXPERIMENTAL FARM (NEAR OTTAWA).

On 5th July last, a contract was entered into for the construction of a residence for the Superintendent General of the Experimental Farms, and at the date of this report the building is approaching completion. The building consists of a basement of stone divided into furnace and fuel room, wash room, store room and cellar; a ground floor with brick outer walls, and partitions and floors of wood, containing a parlor 16 feet by 23 feet, a library 15 feet by 20 feet, a dining room 15 feet by 22 feet, a hall 16 feet by 17 feet, a bedroom 14 feet by 16 feet, a kitchen 14 feet by 16 feet, and a scullery 11 feet by 16 feet, besides larder, sewing room, pantry, vestibule, W. C., &c.; a first floor of wood, containing six bed rooms, bath room, &c., and the attic six bed rooms.

On 18th October last a contract was entered into for the erection of four residences for the staff officials. These are wooden, two and a-half storey buildings on stone foundations. Nos. 1 and 4 are similar, containing each on the ground floor a double parlor 12 feet by 32 feet, a dining room 14 feet by 19 feet, a kitchen 14 feet by 11 feet, a hall 11 feet by 23 feet, besides vestibule, pantry, store, closet, &c.; on the first floor four bed rooms, a dressing room, a bath room and a water closet; and on the attic floor three bed rooms. Residence No. 2 contains on the ground floor a double parlor 12 feet by 25 feet, a dining room 16 feet by 16 feet, a kitchen 13 feet by 13 feet, a hall 10 feet by 17 feet, a larder, a pantry, a vestibule, &c.; on the first floor five bed rooms, a bath room and a W. C., and on the attic floor three bed rooms. Residence No. 3 contains on the ground floor a double parlor 13 feet by 26 feet, a dining room and a hall each 13 feet by 16 feet, a kitchen 11 feet by 15 feet, a pantry, a store room, a closet, &c.; on the first floor six bed rooms and a bath room; and on the attic floor two bed rooms.

On 27th August last a contract was entered into for the barn and the stabling which is connected with it, forming together a hollow square. The barn is 52 feet

in breadth by 144 feet in length, and the two ranges of stabling each 102 feet in length by 27 feet in breadth. These buildings are of wood on stone foundations, the siding being covered in part with vertical sheathing and in part with shingles with which the roofs are also covered. The barn is in three storeys of 11 feet, 13 feet and 34 feet respectively, the last being to the apex of the roof; the stabling is in two stories of 11 feet and 19 feet, the latter to the apex of the roof.

On 28th June last a contract was entered into for the construction of a building for museum, laboratories and offices. There is to be a one story portion 37 feet 6 inches by 39 feet 6 inches, to contain the laboratories and an office; and a two story portion 43 feet 6 inches by 23 feet 6 inches to contain four offices on the ground floor and a museum over; the walls are to be brick with stone dressings and foundations; the floors, roofs and partitions of wood, and the roof covering of galvanized iron.

Plans are in course of preparation for green houses, and tenders for the construction are to be called for at an early date.

A contract was entered into on the 28th March last for hot water heating apparatus for the Superintendent General's residence and the four staff residences.

Plans and specifications prepared and work executed under the superintendence of this Department.

Clerk of works for Superintendent General's residence, barn and stabling and museum and offices, Mr. W. J. Beckett.

Clerk of works for staff residences, Mr. James Gibson.

Contractor for Superintendent General's residence, Mr. F. Toms.

Contractor for staff residences, Messrs. Tobin & O'Keefe.

Contractor for barn and stabling and museum and offices, Mr. Wm. Stuart.

Contractor for heating apparatus, Messrs. F. G. Johnson & Co.

#### GOVERNMENT HOUSE.

A new drying shed, 36 feet by 12 feet by 12 feet, was built in garden; walls covered with vertical boarding and battens; roof shingled.

The old cow-house was removed and replaced by a new wooden building, 26 feet by 40 feet by 12 feet, clapboarded, shingled, painted, and resting on a foundation of cedar posts.

The billiard room roof, having insufficient pitch, was taken off, raised 18 inches at the ridge, and re-covered with galvanized iron.

The roof of the large storehouse and that of the gate lodge shed were re-shingled. 1,500 lineal feet of tile drain from root house and 300 feet of land tile drain in garden were laid.

Sundry carpets, rugs, articles of furniture, curtains, &c., were provided; and the usual general cleaning, repairs, minor alterations, partial repainting, whitewashing, distemping, &c., were carried out under the superintendence of this Department.

Clerk of Works, Mr. Wm. Hutcheson.

#### PEMBROKE.

##### POST OFFICE.

A site on Pembroke street, at the north-eastern end of the bridge over the Muskrat River, having been purchased during the previous year, plans, &c., were prepared, tenders invited, and the contract awarded for a building to accommodate the Post Office, Customs and Inland Revenue Offices.

The building is to be a  $2\frac{1}{2}$  story stone building, 44 feet by 50 feet, with wooden floors, partitions and roof, and metal roof covering, and is to contain the local Post Office on the ground floor, the Customs and Excise Offices on the first floor, the caretaker's apartments in the attic, the Examining Warehouse, Weights and Measures Offices, Gas Inspector's Office, and furnace and fuel rooms in the basement.

Plans, &c., prepared and works carried out under the superintendence of this Department.

Clerk of Works, Mr. J. L. Morris, P. L.S.  
Contractors, Messrs. Munro, Beatty & Grieve.

### PETERBOROUGH.

#### POST OFFICE.

This building is completed, fitted up, furnished and provided with hot water heating apparatus.

Plans, &c., prepared by this Department.  
Superintending Architect, Mr. John E. Belcher.  
Clerk of Works, Mr. Thomas Rutherford.  
Contractor for building, Mr. John E. Askwith.  
Contractor for heating apparatus, Messrs. McAndrew & Noble.

### PORT ARTHUR.

#### POST OFFICE.

Negotiations with a view to obtain a site are in progress.

### PORT COLBORNE.

#### POST OFFICE, &C., BUILDING.

This building, which was transferred on 16th April last, by Order in Council from the Department of Railways and Canals, is a one story brick structure and is occupied as a Post Office, Custom House and Inland Revenue Offices.

### PRESCOTT.

#### POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICES.

A site was acquired, being part of Lots 7 and 8 in Block 2 fronting on South King street and North Water street; plans, &c., were prepared, and tenders invited, and contract for the construction of the building awarded. There are to be two buildings each two and a half storeys, 49 feet by 28 feet with brick walls, stone foundations, wooden roofs, floors and partitions, and with metal roof covering. The Post Office is to front on King street, and have the ground floor for a Post Office, the first floor for Inland Revenue Offices; the attic for the caretaker's apartments, and the basement for the heating apparatus. The Custom House is to front on Water street, and will have the basement for heating furnace and fuel, the ground floor for an Examining Warehouse, and the first floor for Custom Offices; the attic unfinished.

Plans, &c., prepared and work to be superintended by this Department.  
Clerk of Works, Mr. D. Barr.  
Contractors, Messrs. Crain & Mix.

### ST. CATHARINES.

The Post Office floor was relaid in maple; the building was provided with a flagstaff; and some ordinary repairs were effected.

### ST. THOMAS.

#### POST OFFICE, &C., BUILDING.

An iron fence has been put up on the Talbot street front; and some ordinary general repairs executed.

## TORONTO.

### CUSTOM HOUSE.

Sundry articles of furniture were supplied to the Collector's Office, and the Steamboat Inspection Office.

### EXAMINING WAREHOUSE.

New boilers, steam engines and elevator were placed in the building, and the old machinery altered to suit new engine. Alterations were made to old engine-room to convert it into an express office.

General repairs were made to the original portions of the building.

Plans and specifications prepared and work supervised by Mr. D. B. Dick, Architect.

Contractor for alterations and additions, Mr. J. Fletcher.

Contractor for elevator, Mr. J. Fensom.

Contractors for engine, boilers, &c., Messrs. Inglis & Hunter.

### POST OFFICE.

General repairs to interior of building and to Peter street branch office, were effected.

## TRENTON.

### POST OFFICE, &c.

During the previous year a lot situated on the corner of Albert and Perry streets was acquired as a site, and on 2nd December last, a contract for the construction of the building was entered into. The building is to consist of a 2½ story stone main portion 40 feet by 49 feet, with a one story stone annex, 34 feet by 18 feet in the rear. The floors, partitions and roofs are to be of wood, and the roof covering of galvanized iron. The ground floor of the main portion is to be for the Post Office, the first floor for the Customs, and the attic for the Caretaker; the annex is to be the Examining Warehouse.

Plans, &c., prepared and work being carried out under the supervision of this Department.

Clerk of Works, Mr. Geo. Crowe.

Contractor, Mr. Walter Alford.

## PROVINCE OF MANITOBA.

### BRANDON.

#### IMMIGRANT BUILDING.

Essential repairs were executed to woodwork, painting, &c.

### STONY MOUNTAIN.

#### MANITOBA PENITENTIARY.

*Warden's Residence.*—A gasoline apparatus, gas fittings and electric bells were put in, furniture and carpets were supplied, and painting and kalsomining done to woodwork and walls.

*Hospital and Laundry.*—This building which was described in my report of last year has been completed and occupied; a hot water heating apparatus has been put in, and contracts have been entered into to fit up the hospital attic as kitchen and recreation room, and to put in fittings and machinery of laundry. The Surgeon's dispensing room has been fitted up and furnished.

*New Chapels.*—These which were fully described in my report of last year, have been completed and furnished with a hot water heating apparatus.



**Warden's Store and Fuel Building.**—A one and a half story brick building, 30 feet by 20 feet, carried out by day labor.

**Warden's Stables.**—A brick one and a half story building, 54 ft. by 44 ft., the ground floor divided into cow and horse stalls and loose boxes, carriage house and harness room, and the attic for hay-loft. Construction was commenced at the close of the fiscal year, and it is expected that the building will be completed before the autumn.

**Guard's Cottages.**—Six additional cottages for guards were commenced and completed during the fiscal year.

**Surgeon's and Chaplains' residences.**—Plans are prepared and the foundation of the Surgeon's residence put in.

**General.**—A new engine for pumping and lathe work was supplied. A new barbed wire corral for cattle and fence for hay stacks were put up; new eave troughs and conductors were supplied to prison building, and general repairs done to drains, plumbing, glazing, &c.

Plans, &c., prepared by this Department.

Clerk of works, Mr. D. Smith.

Contractor for construction of hospital and laundry, Messrs. Rourke & Cass.

Contractors for heating apparatus, hospital and chapels, and for machinery and heating laundry, Messrs. Garth & Co.

## WINNIPEG.

### CUSTOM HOUSE.

Some minor repairs were made and some additional furniture supplied.

Resident Clerk of Works, Mr. D. Smith.

### IMMIGRANT SHED.

Plans and specifications were prepared for a building to replace that destroyed by fire; but owing to the want of a suitable site, nothing further has been accomplished.

Resident Clerk of Works, Mr. D. Smith.

### INFANTRY SCHOOL.

This building, which was referred to in a previous report, was completed in October last and transferred to the Department of Militia for occupation.

Resident Architect, Mr. W. Chesterton.

Contractors, Messrs. Murray & McDiarmid.

### POST OFFICE

The uppermost story of the building was fitted up and furnished as offices for the Dominion Land Office.

Platforms and escape ladders were placed to each flat in rear of building; safety doors were placed on elevator, and some alterations to carpentry, plumbing, machinery, boiler, &c., were effected.

Plans, &c., prepared by this Department.

Resident Clerk of Works, Mr. D. Smith.

## NORTH-WEST TERRITORIES.

### CALGARY.

#### BARRACKS.

Contracts for the following buildings were entered into on 21st December, 1887, and the buildings are in progress:—

**Barrack's Mess-room and Kitchen.**—A two-story main building of wood 266 ft. by 32 feet, with a one-story building in rear, 66 feet by 52 feet, all of wood.

The main barrack building contains six barrack rooms, 30 feet by 22 feet, on each floor, and the rear building a mess room, a kitchen, a scullery and two wash-rooms.

*Hospital*.—A one-story wooden building to contain two wards, 22 feet by 23 feet each, a surgery, 17 feet by 12 feet 6 inches, a dining room, 17 feet, by 12 feet, a kitchen 12 feet by 12 feet, a bathroom, 10 feet by 10 feet, besides hospital steward's room, hall, storeroom and closets.

Plans, &c., prepared and work carried out under the supervision of this Department.

Clerk of Works, Mr. C. B. Kenway.

Contractors, Messrs. Kennedy & Heney.

## BATTLEFORD.

### MOUNTED POLICE BUILDINGS.

Extensive repairs and renewals of guard-house were effected and the barracks plastered and finished.

Plans, &c., prepared by this Department.

Resident Clerk of Works, Mr. A. F. Berthiaume.

## EDMONTON.

### COURT HOUSE.

Some fittings and furniture were supplied.

## LETHBRIDGE.

### MOUNTED POLICE BUILDINGS.

The two buildings erected last year for officers' quarters were remodelled under the Commissioner's direction, and woodsheds, and 6 feet platforms, 6 feet wide, were added.

The Division mess room was enlarged and the chimney was taken down and rebuilt. Privies were built for Sergeants' Mess and single officers' quarters, and a 10 feet wide platform was erected along the entire front of the barrack building. The attics of barracks and mess room were floored.

The following buildings were erected during the fiscal year:—

Stable building similar to that constructed last year.

A building for single Officers' Quarters.

An addition to Quartermaster's Store and Offices, 60 feet by 28 feet, for N.C.O. Mess and Quarters.

A saddle room, 24 feet by 48 feet.

A smith's shop, 24 feet by 24 feet.

Artisans' shops for carpenters, saddlers and tailors, and to accommodate the veterinary surgeon's dispensary.

A cook's quarters and pantry added to the division kitchen.

Plans, &c., prepared and work supervised by this Department.

Resident Clerk of Works, Mr. B. C. Kenway.

## MACLEOD.

### CUSTOM HOUSE.

A one and a half story wooden building, with a stoop in the rear was erected to serve as a Custom House and Bonded Warehouse.

### BARRACKS.

New chimneys were built to the barrack buildings and some ordinary repairs executed.

## MAPLE CREEK, TOUCHWOOD HILL AND WOOD MOUNTAIN.

A log house to be used as an outpost by the Mounted Police was erected at each of these localities.

## MEDICINE HAT.

### BARRACKS.

The woodwork of the barrack building was painted and some ordinary repairs executed.

## PRINCE ALBERT.

### COURT HOUSE AND JAIL.

This building which was described in my report of last year has been completed, fitted up, furnished and occupied. Fire proof vaults were built on ground floor for Sheriff and County Court, and spare vault in basement. A log stable, 18 feet by 24 feet, with a waggon shed, 12 feet by 24 feet, were built. 1,188 feet of wire fence with gates, and 150 feet of board fence were put up. Prisoners' latrines were built in yard.

Plans, &c. prepared by this Department.

Clerk of Works, Mr. H. J. Peters.

Contractor, Mr. Thos. Doddridge.

### NORTH-WEST MOUNTED POLICE BUILDINGS.

These buildings which are now completed were carried out by days' work. They are of wood.

*Barrack Building*.—158 feet 8 inches by 27 feet 8 inches, with rear wing 88 feet 4 inches by 27 feet 8 inches and two annexes to main building, each 23 feet 6 inches by 13 feet; 530 feet lineal of drain from washhouse to cess pit.

*Officers' Quarters*.—37 feet by 24 feet 6 inches, with two annexes for kitchens, one 15 feet 6 inches by 21 feet, and the other 10 feet by 14 feet.

*Guard Room*.—48 feet by 24 feet.

*Sergeants' Mess Building*.—50 feet by 26 feet, with an annex kitchen 27 feet 6 inches by 16 feet.

*Quartermaster's Store*.—60 feet by 30 feet, with frost proof cellar under one half the area.

*Quartermaster's General Store*.—32 feet by 22 feet.

*Ice House*.—20 feet by 20 feet.

*Sick Stable*.—50 feet by 28 feet.

*Blacksmith's Shop*.—24 feet by 24 feet.

*Stables*.—Two buildings, each 76 feet 2 inches by 24 feet 8 inches, and with an annex 12 feet by 29 feet 8 inches, for saddlery.

*Artisan's Shop*.—24 feet by 28 feet, divided for four trades.

*Latrines*.—Two sets, each 16 feet by 8 feet.

The square was graded, 1,000 feet lineal of four feet wide sidewalk was laid and a flag pole 84 feet high was erected.

Plans, &c., prepared by this Department.

Resident Clerk of Works, Mr. H. J. Peters.

## QU'APPELLE.

### INDUSTRIAL SCHOOL.

The addition for girls schools referred to in my last report is nearly completed.

Plans, &c., prepared by this Department.

Clerk of Works, Mr. Jas. Morrison.

## REGINA.

### MOUNTED POLICE BUILDINGS.

*Barracks.*—These were described in my report of last year, since when they have been completed, fitted up with tables, arm racks, &c., and occupied. A complete system of drainage, including cesspool has been put in. Outside storage tanks for water and inside supply cisterns in attics have been provided.

*Stables.*—An addition 16 feet by 30 feet, to form shelter sheds was made to each of the seven stables.

*Commissioner's Residence.*—Described in my last annual report and since then completed and occupied. An old building was removed to the site and converted into a stable.

*Surgeon's Residence.*—Described in last annual report and since completed and occupied.

*Officers' Quarters.*—Five of the old barrack buildings were converted into and fitted up as Officers' Quarters and occupied.

*Sergeants' Mess.*—An old barrack building was fitted up for this purpose.

*Hospital.*—This which was described in the last annual report was completed and occupied.

*Generally.*—A Canteen was formed out of an old mess room, two brick chimneys were built to the Quartermaster's store and some general repairs were made.

Plans, &c. were prepared and work carried out under the supervision of this Department.

Resident Clerk of Works, Mr. Jno. Morrison.

Contractor for Commissioner's residence and barracks, Mr. R. H. Williams.

Contractor for surgeon's Residence and Hospital, Mr. Jno. McRea.

### NORTH-WEST COUNCIL CHAMBER.

Council Chamber repapered and repainted.

Resident Clerk of Works, Mr. Jno. Morrison.

### INDIAN OFFICES.

A stone foundation was constructed under the building, the walls were brick-veneered and the outside woodwork painted.

Resident Clerk of Works, Mr. Jno. Morrison.

### COURT HOUSE.

The interior was cleaned, calsomined and painted; and supplied with some necessary furniture, fittings and stoves.

Resident Clerk of Works, Mr. Jno. Morrison.

### JAIL AND LUNATIC ASYLUM.

Fences and outbuildings were erected, a well-house was built, and a force pump put in building.

Resident Clerk of Works, Mr. Jno. Morrison.

### POST OFFICE.

Some minor repairs were effected.

Resident Clerk of Works, Mr. Jno. Morrison.

### LIEUTENANT GOVERNOR'S RESIDENCE.

The outside of kitchen was re-sided and some minor repairs done to woodwork.

Resident Clerk of Works, Mr. Jno. Morrison.

### RIDING AND DRILL HALL.

This building was destroyed by fire 26th November, 1888.

## FORT SASKATCHEWAN.

### MOUNTED POLICE BARRACKS.

The Barrack Buildings were repaired and enlarged.

## PROVINCE OF BRITISH COLUMBIA.

### NANAIMO.

#### POST OFFICE, &c.

An inside storm porch was erected in the Post Office lobby; some repairs were made to the roof; gas has been laid in the building and the water pipes extended to the first floor.

### NEW WESTMINSTER.

#### PENITENTIARY.

*Laundry.*—The heating and fittings referred to in last year's report are completed, as also water closets, urinals, baths, and cisterns for hot and cold water.

*Water Supply.*—The dam has been cleaned out to a depth of 2 feet, and the water thereby improved. The main water pipes to Guards' cottages being choked were taken up and replaced by 2 inch pipes, and sundry additions made to the service. In the prison building the 3 inch main has been extended to the roof with fire plugs on each floor.

*Gas Supply.*—The New Westminster Gas Company has extended its 3 inch main to the penitentiary, and gas piping, fixings and fixtures fitted for the lighting of the entire prison building with gas.

*Dwelling for single Officers.*—A contract for this building was entered into on 27th March last and is expected to be completed by next autumn.

*Sundries.*—The cow house was floored in cement, and a new range supplied for the kitchen.

*Repairs.*—Necessary repairs to the main building, fencing, drains, dam, water-pipes, &c., were effected.

Works carried out under the supervision of Mr. F. C. Gamble, C.E.

Contractors for cottages, Messrs. Ackerman Brothers.

#### PUBLIC BUILDING.

The building has been fitted up for gas.

Some minor alterations and additions were made to the first floor for the convenience of the customs and Savings Bank officials occupying the building.

Works executed under the supervision of Mr. F. C. Gamble, C.E.

### VICTORIA.

#### CUSTOM HOUSE.

Some minor repairs were executed and the roof painted under Mr. F. C. Gamble's supervision.

#### DOMINION SAVINGS BANK.

A large safe was supplied and placed in the vault of the Bank of British Columbia.

#### POST OFFICE.

Repairs were made to the roof; the roof and outside walls were painted and the inside walls and ceilings kalsomined. The Money Order Office was enlarged; general repairs were effected, and some furniture supplied.

Work executed under the supervision of Mr. F. C. Gamble, C.E.

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## **ENGINEERS, ENGINEMEN, FIREMEN, &c., PUBLIC BUILDINGS.**

The various engineers, enginemen, firemen and caretakers, and the heating apparatus of Dominion Public Buildings, with the exception of those at the various Penitentiaries, Military Buildings, and at the Post Offices and Custom houses at Kingston and Quebec, are now under the control of this branch of the Department.

### **HEATING DOMINION BUILDINGS (FUEL.)**

Tenders were invited by public advertisement, and fuel was supplied to 76 of the Public Buildings.

### **LIGHTING DOMINION BUILDINGS.**

The lighting of the various Dominion Buildings, excepting that of the Penitentiaries and Military Buildings, is under the charge of and was administered by this branch of the Department.

### **WATER FOR DOMINION BUILDINGS.**

The water supply of the various Public Buildings, excepting the Penitentiaries and Military Buildings, is administered by this branch of the Department.

### **GENERALLY.**

Usual and ordinary repairs were effected, furniture supplied, and cleaning, and coloring done to a large number of buildings not herein referred to.

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**APPENDIX No. 3.**

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**LIST**

**OF**

**ENGINEERS, ENGINEMEN, FIREMEN AND CARETAKERS**

**OF**

**PUBLIC BUILDINGS THROUGHOUT THE DOMINION,**

**GIVING**

**DATE OF APPOINTMENT, SALARY PAID, ETC.**

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## APPENDIX No. 3.

Ref. No. 93013.

STATEMENT showing the Engineers, Firemen, Carpenters and Watchmen employed at Dominion Public Buildings, on 30th June, 1888, giving Date of appointment, Salary, &c.

Place.	Building.	Name.	Position.	Date of Appointment.	Salary per Month.	Time employed per Annum.	Total Amount paid per Annum.
					\$ cts.		\$ cts.
Amherst .....	Post Office .....	James Morrison .....	Caretaker .....	2nd November, 1886..	33 33	12 months...	400 00
Antigonish .....	Public Building .....	H. P. Hill .....	do .....	1st March, 1887...	3 75	12 do .....	45 00
Aricat .....	Building on P. O. Site...	John McAsbill .....	do .....	16th September, 1887..	16 67	12 do .....	200 00
Baddeck .....	Public Building .....	Alex. McDonald .....	do .....	23rd December, 1888...	63 50	12 do .....	760 00
Halifax .....	Dominion Building .....	John Powell .....	Engineer .....	1st October, 1871...	50 00	6 do .....	300 00
do .....	do .....	Richard Power .....	Fireman .....	.....	33 33	12 do .....	400 00
do .....	do .....	V. Sullivan .....	Watchman .....	31st October, 1883...	39 00	12 do .....	468 00
do .....	do .....	Jno Dunn .....	do .....	26th January, 1887...	41 67	12 do .....	500 00
do .....	Examining Warehouse ..	Wm. Power .....	Caretaker .....	31st October, 1886...	37 50	12 do .....	450 00
New Glasgow .....	Penitentiary .....	M. Kennedy .....	do .....	8th November, 1886...	33 33	12 do .....	400 00
Pictou .....	Post Office .....	Jas. Fraser .....	do .....	31st January, 1888...	33 33	12 do .....	400 00
Picton .....	Custom House .....	Geo. Robson .....	do .....	.....	33 33	12 do .....	400 00
Truro .....	Post Office .....	G. Johnson .....	do .....	8th October, 1885...	33 33	12 do .....	400 00
Windsor .....	do .....	Robt. Speers .....	do .....	30th July, 1886...	33 33	12 do .....	400 00
Yarmouth .....	Public Building .....	J. W. Smith .....	do .....	23rd December, 1886...	33 33	12 do .....	400 00
Charlottetown ..	Dominion Building .....	D. McLeod .....	Engineer .....	12th September, 1872..	33 33	12 do .....	400 00
do .....	do .....	J. S. McLeod .....	Fireman .....	13th December, 1887...	28 00	12 do .....	336 00
do .....	do .....	Jas. Grant .....	Watchman .....	18th August, 1881...	37 03	12 do .....	450 00
do .....	do .....	Geo. Walker .....	do .....	.....	37 03	12 do .....	450 00
Montague .....	Public Building .....	Martin Lambert .....	Caretaker .....	12th January, 1887...	33 33	12 do .....	400 00
Summerside .....	Dominion Building .....	James Brazil .....	Watchman .....	5th November, 1885...	33 33	12 do .....	400 00
Bathurst .....	Post Office .....	J. A. Melançon .....	Caretaker .....	13th April, 1887...	33 33	12 do .....	400 00
Dorchester .....	Penitentiary .....	Jas. Piercy .....	Engineer .....	21st November, 1881...	33 33	12 do .....	400 00
Fredericton .....	Post Office .....	Jas. Perkins .....	Caretaker .....	31st May, 1881...	33 33	12 do .....	400 00
Moncton .....	do .....	Extra B. Hicks .....	do .....	11th January, 1886...	33 33	12 do .....	400 00
Newcastle .....	do .....	Patrick Keating .....	do .....	2nd October, 1886...	33 33	12 do .....	400 00
St. Stephen .....	do .....	Samuel Topping .....	do .....	25th May, 1887...	33 33	12 do .....	400 00
Sussex .....	do .....	Thomas Abell .....	do .....	19th October, 1883...	33 33	12 do .....	400 00
St. John .....	Custom House .....	G. H. Jones .....	Engineer .....	17th February, 1880...	60 00	12 do .....	720 00



[illegible]

(APPENDIX No. 3)—STATEMENT showing the Engineers, Enginemen, Firemen, Caretakers and Watchmen employed on Dominion Public Buildings, &c.—Continued.

Place.	Building.	Name.	Position.	Date of Appointment.	Salary per Month.	Time employed per Annum.	Total Amount Paid per Annum.
					\$ cts.		\$ cts.
Orangeville, ..... Ont...	Public Building.	John Wilkins.	Caretaker	15th September, 1896...	33 33 12	do ...	400 00
Peterborough ..... Ont...	do	James Irwin.	do	8th do 1897...	33 33 12	do ...	400 00
Port Colborne. .... Ont...	do	Wm. Armstrong	do	11th June, 1888...	15 00 12	do ...	180 00
Port Hope. .... Ont...	do	Levi Reynolds	do	17th November, 1886...	33 33 12	do ...	400 00
Stratford ..... Ont...	do	J. H. Roberts.	do	.....	50 00 12	do ...	600 00
St Catharines. .... Ont...	do	W. Bryson.	do	9th August, 1883...	33 33 12	do ...	400 00
St Thomas. .... Ont...	do	Jas Russell.	do	4th September, 1885...	33 33 12	do ...	400 00
Toronto do	Dominion Buildings.	J. A. Willis.	Engineer	23rd August, 1873...	100 00 12	do ...	1,200 00
do	Custom House	Jas. Humphreys	Fireman.	16th November, 1881...	50 00 6	do ...	300 00
do	Examining Warehouse.	Jas. Cosgrove	Engineer	24th December, 1874...	60 00 12	do ...	720 00
do	Post Office.	Henry L. Bell.	do	9th May, 1885...	50 00 6	do ...	300 00
do	do	Fred. Simons.	Fireman.	11st January, 1887...	50 00 12	do ...	300 00
do	Revenue Building.	Ed. Appleton.	do	23rd September, 1886...	50 00 12	do ...	600 00
Windsor do	Post Office	Jas. Glanton	do	28th October, 1882...	50 00 6	do ...	300 00
Winnipeg do	do	John Hannon.	Engineman.	7th do 1880...	50 00 12	do ...	600 00
do	Post Office Building.	J. P. Alexander.	do	.....	70 00 12	do ...	840 00
do	do	Jos. Conter.	Fireman.	.....	45 00 12	do ...	540 00
do	do	Ed. Lecourt.	do	27th October, 1887...	45 00 12	do ...	540 00
Nanaimo ..... 8 O...	do	Jos. Glanton.	Caretaker	13th June, 1888...	50 00 12	do ...	600 00
New Westminster. B.C.	Public Building.	John Thompson.	do	10th November, 1883...	50 00 12	do ...	600 00
Prince Albert...N.W.T.	do	John Murphy.	do	1st October, 1884...	50 00 12	do ...	600 00
	Court House and Jail...	George Northgraves.	do	14th June, 1887...	33 33 12	do ...	400 00

R. STECKEL.

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**APPENDIX No. 4.**

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**REPORT**

**ON THE**

**HEATING APPARATUS, GAS, WATER & BELL SERVICES, &c.**

**IN THE**

**PUBLIC BUILDINGS, OTTAWA,**

*For the Fiscal Year Ended 30th June, 1888,*

**BY**

**JOHN R. ARNOLDI, CHIEF MECHANICAL ENGINEER.**

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## APPENDIX No. 4.

### REPORT OF THE CHIEF MECHANICAL ENGINEER.

Ref. No. 90,637.

CHIEF MECHANICAL ENGINEER'S OFFICE,  
OTTAWA, 21st August, 1888.

SIR,—I have the honour to report as follows, in reference to the Public Buildings, Ottawa, during the fiscal year ended the 30th June, 1888, viz:—

#### PARLIAMENT BUILDINGS.

Nothing was required to be done during the past year to electrical apparatus, boilers, water, gas or bell services of this building beyond ordinary maintenance.

It was found necessary to replace the old pan water closets in connection with the Speaker's quarters of the House of Commons and Senate with an improved modern pattern. The ventilation of these closets and of the Railway Committee room was considerably improved.

#### EAST AND WEST BLOCKS.

These buildings required little to be done beyond the ordinary maintenance to the heating apparatus, boilers, gas, water and bell services.

#### SUPREME COURT.

Ordinary maintenance only was required in this building to the heating apparatus, boilers, gas, water and bell service.

#### OTTAWA POST OFFICE AND CUSTOM HOUSE.

Three new water closets, &c., were placed in this building during the past year with improved ventilation; otherwise ordinary maintenance to the heating apparatus, gas, water, and bell service was all that was required.

#### GEOLOGICAL MUSEUM.

Nothing but the ordinary repairs to the water, gas and bell service was required in this building.

#### PARLIAMENT GROUNDS FLOWER PROPAGATING HOUSE.

No work was required in this building.

#### INDIAN AFFAIRS (LEASED.)

Ordinary maintenance to water, gas and bell services only was required to be done in this building.

#### POST OFFICE DEPARTMENT (LEASED) SAVINGS BANK BRANCH.

Nothing but the ordinary maintenance was required in connection with the water, gas and bell services.

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MAJOR'S HILL PARK.

No work was required here further than ordinary repairs to the water mains, hose &c., used for watering purposes.

RIDEAU HALL.

Ordinary maintenance only was found necessary to the heating apparatus, gas, water and bell services.

I have the honour to be, Sir,  
Your obedient servant,

JNO. R. ARNOLDI,  
*Chief Mechanical Engineer.*

A. GOBEL, Esq.,  
Secretary Department of Public Works.

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**APPENDIX No. 5.**

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**REPORT**

**ON**

**HARBOURS AND RIVERS, DREDGES, DREDGING AND SURVEYS**

**THROUGHOUT THE DOMINION.**

**FOR THE FISCAL YEAR ENDED 30TH JUNE, 1888.**

**BY**

**HENRY F. PERLEY, CHIEF ENGINEER.**

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## APPENDIX No. 5.

### REPORT OF THE CHIEF ENGINEER.

Ref. No. 92,368.

CHIEF ENGINEER'S OFFICE,  
OTTAWA, 27TH OCTOBER, 1888.

SIR,—I have the honour to submit herewith my annual report on the harbour works under my charge during the last fiscal year.

I have the honour to be, Sir,  
Your obedient servant,

HENRY F. PERLEY,  
*Chief Engineer.*

A. GORRILL, Esq.,  
Secretary Public Works Department.

### PRINCE EDWARD ISLAND.

#### BELFAST PIER.

Belfast Pier, or Halliday's, is on the south side of Orwell Bay, in Queen's County.

Repairs were made to the western end of the pier to admit of the regular steamer landing passengers and freight.

#### CASCUMPEC.

In Prince County, on the north coast of the island, about 20 miles south of North Cape.

The work of forming a channel through the rocky bar which obstructs the entrance to the harbour of Cascumpec, commenced in 1885, was continued during the past fiscal year.

#### HICKEY'S PIER.

Hickey's Pier, Queen's County, is on the south-eastern side of the Hillsboro' River, about 10 miles north-west from Charlottetown.

During the year some piles were driven around the outer block, and the planking was renewed in places; a new landing slip was constructed, and the approach to the pier was partly rebuilt and filled with brush, stone and clay.

#### MURRAY HARBOUR.

South Murray Harbour Pier, King's County, is at the head of navigation on the South River.

The pier at this place received general repairs, being raised in places and ballasted, and the approach was made good.

#### NEW LONDON.

The Harbour of New London is on the northern side of the Island, about 10 miles south-east of Richmond Bay.

Repairs where made, were necessary, to the works of this harbour.

## NINE MILE CREEK.

This pier is in Queen's County, and is situated 5 miles west of the Block House Light at the entrance to Charlottetown Harbour, in the shallow inlet opening into the passage between St. Peter's Island and the mainland.

General repairs were made to the structure, which has a length of 390 feet and an average width on top of 20 feet.

## NORTH CARDIGAN.

This pier is on the north shore of Cardigan River, near its entrance into Cardigan Bay.

Small repairs were made to the roadway to render it available for present use.

## PINETTE.

This pier is on the south side of the main Pinette River, near the Junction of the north and south branches.

New floor stringers were put in, flooring was renewed, fenders were secured, ballast made good, and other repairs executed to place the pier in proper order.

## SOURIS.

Souris, the eastern terminus of the Island Railway, is in King's County, and about 16 miles south of East Point.

The inner end of the breakwater, over a distance of 800 feet, was raised where necessary, fully ballasted, and other improvements effected.

## TIGNISH.

At the mouth of the Big Tignish River, Prince County, about 8 miles east of North Point.

The "Dredge Prince Edward" was engaged at the commencement of the fiscal year in deepening the channel at this place, working until the 27th August.

## VERNON RIVER.

Vernon River Pier is situated at the head of navigation on the river, about two miles above its entrance into Orwell Bay.

Extensive repairs and improvements were made on this pier during the past fiscal year.

## VICTORIA PIER.

Victoria Pier, Crapaud, is at the head of navigation inward from Crapaud Basin. One of the spans of this pier which was out of order was attended to and made good.

## NOVA SCOTIA.

## ARISAIG.

Arissig, Antigonish County, is on the south-east shore of the Strait of Northumberland, midway between Cape George and Merigomish.

The repairs to the pier, and the construction of the breakwater referred to in the report of last year, have been completed.

## BAYFIELD.

Antigonish County, is on the southern shore of St. George's Bay. The harbour is formed by Pomquet Island and an outlying reef.

The construction of a further length of breakwater, commenced in 1886-87, was continued, and at the close of the fiscal year was about three-fifths completed.

**BAYFIELD WHARF.**

The wharf is on the western side of Bayfield Harbour, a quarter of a mile to the south of the breakwater, is 402 feet in length and varies in width from 22 to 50 feet.

In November, 1887, a contract was let to repair, raise and close pile the two outer blocks and to construct new work between them and the shore, and at the end of the fiscal year the work was virtually completed.

**BAY ST. LAWRENCE.**

Bay St. Lawrence, Victoria County, lies at the northern end of Cape Breton Island, between Capes North and St. Lawrence.

The channel, which was opened during 1886-87 and mentioned in the report of last year as having been filled in with a storm, was again opened, but with no better success, the same filling in taking place as in the previous year.

**BIG BRAS D'OR.**

Big Bras d'Or, Victoria County, is on the south side of the channel of the same name, near its entrance into the Atlantic.

A wharf, 160 feet in length, 20 feet wide, with a return at the outer end giving a channel face of 60 feet and a depth of 11 feet at low tide, is under construction and was about half finished at the end of the fiscal year.

**BIG POND.**

Cape Breton County, on the south side of East Bay, Big Bras d'Or Lake.

A wharf 160 feet in length, 20 feet in width, with a depth of 8 feet at its outer end at lowest lake level, is being built at this place.

**BLUE ROCK.**

Blue Rock, Antigonish County, is on the south coast of St. George's Bay,  $2\frac{1}{2}$  miles east from Tracadie Harbour.

In November, 1886, a contract was entered into for the construction of a breakwater 326 $\frac{1}{2}$  feet in length, and at the 30th June, 1888, about one-third of the work had been done.

**BROAD COVE MARSH.**

Inverness County, is on the Gulf of St. Lawrence, 19 miles north of Mabou and 12 miles south of Margaree.

Up to the close of the fiscal year work was continued on the construction of the wharf mentioned in the report of last year, 344 feet of work having been placed by the contractors and built up to a height of 8 feet above assumed low water.

**CHETICAMP.**

Is in Inverness County, on the Gulf of St. Lawrence, 58 miles north from Mabou.

Between 1st August and 21st October, 1887, the dredge "George McKenzie" was employed in giving a depth of 13 feet of water in the channel leading into the harbour at this place.

**CLIFTON (OLD BARNS).**

Clifton, Colchester County, is at the head of Cobequid Bay, about 7 miles distant from Truro.

During the last fiscal year a loading wharf, 237 feet long, was built at this place.

**COMEAUVILLE.**

The wharf at Comeauville, Digby County, is on the southern shore of St. Mary's Bay, about 3 miles south and west from Church Point, and is one of those taken over by the Dominion from the Local Government.

Extensive repairs were made to the structure, and it was put in good order for traffic.

#### COW BAY.

On the eastern coast of Cape Breton, about 18 miles south-east from Sydney. Extensive repairs were made to this important breakwater during the fiscal year, and an annual expenditure will be required to maintain it as it is exposed to the direct sweep of the Atlantic during easterly gales, and is much weakened by the attack of the *teredo*.

#### CRANBERRY HEAD.

Is on the Bay of Fundy, about 6 miles north of the town of Yarmouth. Some small general repairs were made to the pier at this place.

#### DIGBY.

Digby is the shiretown of the county of that name, and is situated at the western end of Annapolis Basin.

The work undertaken during the year consists in the construction of a block 40 by 40 feet on site of displaced outer block, of an inclined landing 26 feet wide and 80 feet long between the new outer block and the undestroyed inner portion of the pier, and a roadway on pile and framed bents connecting the old work with the new outer block.

A contract was entered into for the removal of the portion of the outer block which had been washed into the dredged channel on the south side of the wharf, and at the close of the fiscal year the work was in progress, though but little had been done.

#### EATONVILLE.

Eatonville, formerly called "Three Sisters," is in Cumberland County, about 10 miles north of Cape Chignecto.

At the close of the fiscal year a commencement had been made of the work of constructing a wharf 120 feet in length and 30 feet in width.

#### ECONOMY.

Economy, Colchester County, is on the north side of the Basin of Minas.

A wharf 216 feet in length, 24 feet in width, with 12 feet of water at ordinary tides at its outer end was completed at this place during the year ended 30th June last.

#### INGONISH.

In Victoria County, on the north-east coast of the Island of Cape Breton, midway between Sydney and Cape North.

The beach protection works, referred to in the report of last year, were completed.

#### LISMORE.

Lismore, Pictou County, is on the Strait of Northumberland, 18 miles east of Pictou Harbour.

The wharf, 200 feet long and 20 feet wide on top, which was under construction last year, has been completed.

#### LITTLE NARROWS.

Little Narrows, Victoria County, is a contraction of St. Patrick's Channel of the Great Bras d'Or Lake.

During the year a wharf 129½ feet in length, 20 feet in width, with an L at the outer end, at which there is a depth of 14 feet, was built on the south side of the Narrows.

**LOWER HORTON.**

Lower Horton, King's County, is situate midway between Wolfville and Avonport.

At the close of the fiscal year the work of repairing this wharf was commenced, the timber having been procured during the winter.

**MABOU.**

Is in Inverness County, 6 miles to the north of Port Hood, on the west coast of Cape Breton.

During the year ended 30th June, 1888, the amount appropriated was expended in increasing the height of the brush and stone work built to arrest the travel of sand from the westward, and in extending it a length of 187 feet. This wall now has a total length of 1,112 feet, and the channel has improved since its construction.

**MARGARETVILLE.**

In Annapolis County, is on the southern shore of the Bay of Fundy, about 42 miles east of Digby Gut.

The works of repair to the pier at this place, referred to in the report of last year, were continued to the extent of the amount authorized.

**M'NAIR'S COVE.**

McNair's Cove, Antigonish County, is on the western shore of St. George's Bay, 5 miles south-west from Cape George.

During the year ended 30th June, 1888, the contractor delivered the materials required for the reconstruction of 160 feet of the breakwater, constructed a block 80 feet in length, ready to be sunk into position, and nearly completed the excavation for the foundation of the work.

**METEGHAN COVE.**

Meteghan Cove, Digby County, is on the southern shore of St. Mary's Bay, about 25 miles from Yarmouth and 40 from Digby.

The seaward face of the pier at this place was close sheathed over a length of 700 feet, 575 feet of the inner face were repaired and sheathed, the work levelled up and other works of repairs executed.

**MOIDART.**

Moidart, Antigonish County, is on the Strait of Northumberland, 3 miles west from Arisaig.

A large rock has been made available as a landing for boats by the removal of boulders from its eastern side, by levelling off its top over a distance of 28 feet, and building an approach 73 feet in length.

**PARRSBORO'.**

Parrsboro', Cumberland County, is on the north side of the Basin of Minas, and near the mouth of the Partridge Island River.

During the year the outer end of the pier was sheathed with hardwood plank, and the structure placed in a proper state of repair.

**PICTOU.**

The "St. Lawrence" was engaged during the year in dredging at the railway and market wharves in this harbour, and in the Middle River, opposite the Black Diamond Wharf.

**PORT HOOD.**

The shiretown of the County of Inverness, is on the west coast of Cape Breton, 20 miles north of the northern entrance to the Gut of Canso.

Slight repairs were made to the outer end of the wharf at this place.

Between the 15th and 30th September, the "St. Lawrence" dredged off the end of the wharf, giving a depth of 12 feet at low water.

#### PORT MOUTON.

Port Mouton, Queen's County, is situated about 15 miles west of Liverpool. The top of the old mooring pier was removed and re-built with new materials.

#### SALMON RIVER.

Salmon River, Digby County, is about 3 miles south of Cape St. Mary.

The harbour of Salmon River is formed by a breakwater and loading wharf on the south side of the mouth of the river.

During the year 182 feet of the river face of the southern pier was entirely re-built.

#### SAULNIERVILLE.

Saulnierville, Digby County, is situated on the southern shore of St. Mary's Bay, about 14 miles west of Weymouth.

The landing pier at this place received some necessary repairs.

#### SOUTH-WEST, PORT MOUTON.

In Queen's County, 10 miles from Liverpool.

A breakwater 165 feet in length, with a boat landing for the convenience of fishermen, has been built.

#### SPENCER'S ISLAND.

Spencer's Island, Cumberland County, is situated at the western end of Greville Bay, in the Minas Channel, Bay of Fundy.

The amount appropriated is being expended in the construction of a public wharf 300 feet in length, and at the end of the fiscal year the work was well under way.

#### SUMMERVILLE.

Summerville, Queen's County, is situated on the north side of Mouton Bay, about 12 miles west of Liverpool.

The breakwater at this place is much exposed to southerly storms and has been much damaged by the sea worm.

During the year some general necessary repairs were made to the structure.

#### TANCOOK ISLAND.

Great Tancook Island, Lunenburg County, is in Mahone Bay, about 8 miles south from the town of Chester.

The pier constructed at the joint expense of the Dominion and Provincial Governments in 1873 having become much out of repair received extensive repairs to the outer end and L.

#### TROUT COVE.

Trout Cove, Digby County, is on the south shore of the Bay of Fundy, nearly midway between Digby Gut and Petite Passage.

During the fiscal year 140 feet of the inner portion of the seaward face of the work was rebuilt from the beach to the top of the "break," part of the flooring was renewed and other repairs executed.

#### WALLACE.

Wallace is in Cumberland County, 16 miles from Wentworth.

The "Cape Breton" dredged from the 3rd October to 5th November, 1887, in improving the channel for the ferry, and in removing obstructions off the "Union Freestone" and "Wallace Grey Stone" Companies' wharves.

## WESTERN HEAD.

Western Head, Queen's County, is situate on the southern entrance to Liverpool Bay, about 4 miles from Liverpool.

During the year the construction of a stone breakwater for the protection of fishing vessels was commenced, and the work was still in progress on the 30th June, 1888.

## WILLOW COVE.

Willow Cove, Queen's County, is at the head of Port Mouton Harbour.

A breakwater 140 feet in length was built during the year at this place for the protection of fishing boats, especially of the larger class, as the anchorage is soft and bad.

## YARMOUTH.

Yarmouth is the shiretown of the county of that name.

During the whole of the fiscal year 1887-88, the dredge "Canada" was engaged in improving the channel in this harbour.

## NEW BRUNSWICK.

## ANDERSON'S HOLLOW.

Anderson's Hollow, Albert County, is on the eastern side of Salisbury Bay which lies between Cape Enragé and Matthew's Head, on the northern side of the Chignecto Channel, the north-east arm of the Bay of Fundy.

During the year a contract was entered into for the construction of 260 feet of cribwork to connect the isolated breakwater—built in 1678-79—with the shore, and at the 30th June last the work was well under way.

## BAY VERTE.

Bay Verte is on the eastern coast of New Brunswick, at the boundary between that province and Nova Scotia.

On the 28th November, 1887, a contract was entered into for the construction of a ballast wharf 100 feet long by 40 feet wide near the head of the bay, and the work was satisfactorily completed at the end of the fiscal year.

## BELLIVEAU.

Belliveau, Westmorland County, is on the eastern shore of the Petitcodiac River, about 18 miles below the town of Moncton.

The necessity for a public wharf at this place having been brought to the notice of the Department, a contract has been entered into for the construction of one, 233 feet long, 24 feet wide on the top, and at the close of the fiscal year about one-third had been built.

## CAPE TORMENTINE.

Cape Tormentine is on the New Brunswick coast of the Strait of Northumberland, and opposite Cape Traverse, Prince Edward Island.

Owing to the failure of the contractors to prosecute the work, fresh tenders were called for, and a contract has been entered into for the completion of the work projected.

## CLIFTON.

Clifton, Gloucester County, is on the southern shore of the Baie des Chaleurs; about 18 miles eastward from the town of Bathurst.

The following repairs were executed on the breakwater at this place: two breaches in the face at the north-east and north-west corners were made good, bal-

last replaced, faces sheathed on the outside, hardwood sheathing placed on a portion of the eastern face, and 23 new fenders on inner end of eastern face.

#### COCAGNE.

The harbour of Cocagne, Kent County, is on the south-west coast of the Strait of Northumberland, about 10 miles north of Shediac Harbour.

The wharf built by the Department in 1881-82 having settled irregularly was levelled up and widened over a length of 100 feet.

#### DALHOUSIE.

At the head of the Baie des Chaleurs and a short distance below the mouth of the River Restigouche.

The ballast wharf, 300 feet in length, referred to in the report of last year, was completed on the 24th October, 1887.

#### GRANDE ANSE.

Grande Anse, Gloucester County, is a small indentation in the southern shore of the Bay des Chaleurs, about midway between the harbours of Bathurst and Shippegan.

Materials have been procured for continuing the reconstruction of the top of the breakwater which was carried away in January, 1885.

#### PARTRIDGE ISLAND.

This island lies directly off the entrance to the harbour of St. John.

Many years ago two small piers were built to facilitate the landing of supplies for the lighthouse and other buildings of the Marine Department.

The eastern of these piers was almost destroyed during a storm in February, 1887. The wreckage, which was swept into the harbour was removed, and at the close of the fiscal year the work of rebuilding the eastern pier was nearly completed.

#### RICHIBUCTO.

Is situated on the south-west shore of the northern entrance into the Strait of Northumberland, and about 40 miles north of Shediac Harbour.

The amount appropriated was expended in close piling the outer end of the breakwater, in placing brush and stone where required, and in constructing about 200 feet of brush, pile and stonedam along the beach.

Between 13th July and 7th September, 1887, the dredge "St. Lawrence" was engaged in deepening to 14 feet at low water, and in otherwise improving the north channel, one of the outer entrances to the harbour.

#### RIVER MADAWASKA.

The Madawaska is a tributary of, and empties into, the River St. John, at Edmundston.

The amount appropriated for the past fiscal year was expended on the improvement of the tow path and the removal of obstructions in the river.

#### RIVER ST. JOHN.

Between St. John and Fredericton 78 snags were removed from different parts of the river.

From 1st to 18th July, and from 20th September to 15th October, the dredge "New Dominion" was engaged in opening a channel to the public wharf at the head of Belleisle Bay, King's County, at which latter date the work was completed.

At Grand Lake, Queen's County, the same dredge was employed in improving the channel through the flats, working from the 18th July to the 10th September.

Between Spring Hill and Bear Island, sand bars and boulders were removed.

Sand bars and boulders which obstructed the channel, were removed between Bear Island and Meductic Falls.



At Meductic Falls blasting operations were carried on, sand bars and boulders were removed from the channel between the Falls and Eel River, and the tow path was repaired.

The tow path was repaired, and obstructions were removed between Eel River and River des Chutes.

Between Aroostook and Salmon River repairs were made to the tow path.

Tow path repaired and obstructions removed between Salmon River and Grand Falls.

At Grand Falls obstructions were removed, and the shear dam on the east side of the river was repaired.

From the Grand Falls to the River St. Francis repairs were made to bridges on the tow path, and the channel was cleared of boulders and sand bars.

At Edmundston the breakwater was planked.

On the River Tobique, below the Forks, the tow path was repaired, and ledges, boulders and other obstructions were removed from the channel.

#### ST. JOHN HARBOUR.

The protection work at the inner end of the breakwater at Negro Point and around the foot of the cliff on which stands Fort Dufferin, again received much damage during the winter of 1886-87, and on the 24th November last a contract was entered into for the reconstruction of that part of the work which had been carried away, and for strengthening and repairing the other portions of the retaining wall, and at the end of the fiscal year the work was about half completed.

#### UPPER SALMON RIVER.

This river empties into Salisbury Bay, at the Village of Alma, Albert County, at the head of the Bay of Fundy.

The further length of breakwater, referred to in the report of last year was completed and accepted in August, 1887, and the inner end of that portion of the breakwater built in 1883, which had been undermined by the sea, was secured by close sheathing and deposits of brush and stone on either side.

#### WILSON'S BEACH, CAMPOBELLO.

On the western side of Campobello Island, near its northern end.

During the year the breakwater was raised, close sheathed and repaired generally.

### QUEBEC.

#### BERTHIER (EN HAUT)

On the north shore of the St. Lawrence, 45 miles north-east of Montreal, and opposite Sorel.

The ice pier constructed in 1886 having been found too low, was raised 3 feet.

#### CAP DE LA MADELEINE.

Cap de la Madeleine is in the County of Champlain, on the north shore of the St. Lawrence, about two miles below Three Rivers.

During the year a pier, 60 feet by 24 feet at bottom, and 52½ feet by 23 feet on top, with an approach 200 feet in length, was built at this place. There is a depth of 8 feet of water at its head.

#### CARLETON

Is in Bonaventure County, on the south shore of the Bay des Chaleurs, 36 miles from Campbellton and 5 miles from Dalhousie, N. B.

A waiting room and freight shed, 28 by 18 feet, was constructed on the wharf.

## COTEAU DU LAC.

Coteau du Lac, or St. Jacques de Soulanges, is situated on the north side of the River St. Lawrence, 24 miles above Montreal.

The wharf under construction at this place consists of a block 100 feet long by 20 feet in width, with 6 feet of water at its outer side, and an approach 110 feet in length.

At the close of the fiscal year the work was more than half completed.

## ETANG DU NORD.

At the western end of Grindstone Island, one of the Magdalen Group, in the Gulf of St. Lawrence.

The breakwater referred to in the report of last year is now completed; it is 500 feet in length, with a width on top of 32 feet.

## GRAND RIVER.

This river flows into the Baie des Chaleurs, 16 miles from Percé.

The original mouth of the river having become closed with sand, and a new one having formed, steps were taken to close this new channel, and the work was in progress at the close of the fiscal year.

## ISLE AUX COUDRES.

In the County of Charlevoix, 12 miles from Baie St. Paul.

The face timbers and fenders which had been broken by the ice were renewed.

## ISLE PERROT.

The wharf at Isle Perrot is situated on the south side of the island, on Lake St. Louis, one and a half miles below the church.

It consists of a block 130 feet in length by 30 feet in width, with a depth of 8 feet of water, and is 580 feet from the shore. It was built by contract and completed during the fiscal year.

## ISLE VERTE.

Isle Verte is the *chef lieu* of the County of Témiscouata.

The construction of a block 50 feet by 40 feet and 20 feet high was commenced at this place, but at the close of the fiscal year was not completed.

## LAPRAIRIE.

Laprairie, the *chef lieu* of the County of Laprairie, is on the south shore of the St. Lawrence, 7 miles above the city of Montreal.

To protect the town from disastrous floods, an earth embankment 1,600 feet in length was constructed at the upper end of the town. It proved most successful during the floods of last winter.

Along the shore, east of the ice pier, a cribwork retaining wall was built on a length of 480 feet. This wall is 10 feet in height and is filled principally with stone.

At the commencement of the fiscal year the dredge "Queen" was engaged in opening a new channel from the main channel in the St. Lawrence to the public wharf, and continued at this work until 1st September.

## LES BOULEMENTS.

On the north shore of the St. Lawrence, 69 miles below Quebec.

The pier at this place received some small repairs.

## L'ISLET.

On the south shore of the St. Lawrence, 63 miles below Quebec.

Repairs were made to the roadway and slip of this pier.

## LONGUEUIL.

Longueuil is on the south shore of the St. Lawrence, nearly opposite the city of Montreal.

A contract was entered into with Messrs. Burns & Smith for the construction of a wharf 430 feet in length, commencing 670 feet from the shore, and the same was satisfactorily completed during the fiscal year.

## NEW CARLISLE.

In Bonaventure County, on the north shore of Baie des Chaleurs, about 65 miles east of Campbellton, N.B.

The wharf at this place received sundry necessary repairs.

## NEWPORT RIVER.

Empties into the Baie des Chaleurs, 25 miles to the westward of Percé.

Materials have been purchased for an addition to the pier protection works.

## NICOLET.

The River Nicolet empties into the St. Lawrence on its south side, at the foot of Lake St. Peter.

During the past fiscal year a further length of 630 feet of pile protection has been driven.

## MURRAY BAY.

In the County of Charlevoix, on the north shore of the St. Lawrence, 84 miles below Quebec.

Some slight necessary repairs were made to the wharf.

## PAPINEAUVILLE.

On the River Ottawa, 41 miles below the City of Ottawa.

The "Nipissing" commenced opening a channel from the Ottawa into Papi-neauville Bay, on 23rd May last, and at the close of the fiscal year good progress had been made.

## PERCÉ.

The chief town of the County of Gaspé.

A contract has been entered into for the construction of a wharf at this place, and, at the close of the fiscal year, the work was in progress.

## PORT DANIEL.

In the County of Bonaventure, on Baie des Chaleurs, and about 50 miles from Percé.

A contract was entered into for the construction of a wharf, 350 feet in length, 20 feet wide for the first 200 feet, 30 feet wide for the next 100 feet, with a block 50 feet square at the outer end, and, at the close of the fiscal year, the work was nearly completed.

## RIVER CABANO.

This river flows into Lake Témiscouata.

Fifteen miles of the river were cleared of boulders and timber which obstructed the navigation.

## RIVER CHATRAUGUAY.

This river empties into the St. Lawrence, on its southern shore, some miles above Canghnawaga.

During the year the dredges "Queen" and "Nipissing" operated in the upper arm of this river, making a channel with a depth of 8 feet. Many large boulders were encountered, which required to be blasted before they could be removed.

#### RIVER DU LIÈVRE.

This river empties into the Ottawa, 18 miles below the city of Ottawa.

In December, 1886, a contract was entered into for the construction of a lock and dam at the Little Rapids, 12 miles above the village of Buckingham, and at the close of the fiscal year the work was well in hand.

#### RIVER DU LOUP (EN BAS)

On the south shore of the St. Lawrence, 114 miles below Quebec,

A quantity of sand, gravel and boulders were removed by hand from the inside channel.

#### RIVER DU LOUP (EN HAUT), LOUISEVILLE.

This river flows through the County of Maskinongé and empties into the St. Lawrence, in Lake St. Peter, 20 miles above Three Rivers.

Dredging through the shoal at the mouth of the river, and referred to in the report of last year, was continued during the fiscal year, and 17,180 cubic yards of mud were removed.

#### RIVER GATINEAU.

This river empties into the Ottawa, on its northern side, below the city of Ottawa.

The "Nipissing" was engaged during September and October in dredging a channel through the obstructions about one-third of a mile below the Canadian Pacific Railway bridge, and through a shoal off the ferry wharf at Gatineau Point.

#### RIVER MADAWASKA.

This river has its source in Lake Témiscouata, and after a course of 30 miles falls into the St. John at Edmundston, N.E.

Rocks and boulders obstructing the navigation were removed over about a mile of the river.

#### RIVIÈRE OUELLE.

Empties into the St. Lawrence on its southern side, 75 miles below Quebec.

The pier, which is situated at Point aux Orignaux, and was considerably damaged by the ice in the winter of 1887, was repaired.

#### RIVER RICHELIEU, AT SOREL.

The Richelieu flows into the St. Lawrence, on its southern shore, at the head of Lake St. Peter, 45 miles below Montreal.

In order to afford protection to the town of Sorel during the run of ice in the spring, two ice piers were built during the fiscal year, one being situated 3,000 feet above the Richelieu Company's wharf in 19 feet of water, and the other 950 feet above the first in 22 feet of water.

#### RIVER RICHELIEU.

During the past fiscal year the work of straightening and deepening the crooked channel between the island and the western shore at St. Antoine was prosecuted by the departmental dredges "Nipissing" and "Queen."

#### RIVIÈRE STE. ANNE DE BEAUPRÉ.

This river empties into the St. Lawrence, on the northern side, in the Parish of Ste. Anne, Montmorency County.

The improvements undertaken to facilitate the descent of timber on this river, consisting in the removal of rocks and the construction of dams, were completed during the fiscal year.

#### RIVER ST. FRANCIS.

The St. Francis empties into Lake St. Peter, 3 miles below the mouth of the River Yamaska.

Dredging through the shoal at the mouth of the river as well as through one 2 miles above Tourville Mills, and through another at the "Great Bend,"  $\frac{1}{2}$  of a mile below the mills, was continued during the year ended 30th June, 1888, 27,200 cubic yards of material having been removed.

#### RIVER ST. LOUIS.

This river flows, through the County of Beauharnois into the St. Lawrence at the town of Beauharnois.

The dredge "St. Louis" was placed at work early in July, 1887, on the "feeder" or cut between the St. Lawrence and River St. Louis, finishing the work on the 16th October.

#### RIVER YAMASKA.

This river flows from the south into Lake St. Peter.

During the year the following works were executed; the ice breaker at the upper end of the lock was repaired; the old shed was put in good order; brush and stone were placed on both sides of the lock wall and along the wing walls to prevent scour during freshets, and some gravel was deposited in front of the dam near the abutments.

#### ST. ALPHONSE DE BAGOTVILLE.

At the head of Ha! Ha! Bay, River Saguenay, about 66 miles above its mouth. Some slight repairs were made to the flooring of the wharf.

#### STE. ANNE DE LA PERADE.

The River Ste. Anne flows from the north and empties into the St. Lawrence, 23 miles below Three Rivers.

Between the 29th August and 10th September, 1887, a dredge was engaged in making a channel through the shoal at the mouth of the river to give a depth of 6 feet at low tide. Work was resumed on the 6th June, 1888, and was still in progress at the close of the fiscal year, when 9,685 cubic yards of sand, clay and gravel had been removed.

#### STE. ANNE DU SAGUENAY.

In the County of Chicoutimi, on the River Saguenay, opposite Chicoutimi. The timber required for the proposed wharf at this place has been obtained.

#### STE. ANNE DE SOREL.

In the County of Richelieu, and about 3 miles below Sorel, on the south shore of the St. Lawrence.

Another ice pier was built during the year on the property of Bruno Peloquin, and pier No. 3 was raised 3 feet 4 inches.

#### ST. FRANCOIS D'ORLÉANS.

At the extreme end of the Island of Orleans.

A landing slip was constructed, cap timbers and fenders placed where required, and other necessary repairs were effected.

**ST. IRENÉE.**

In the County of Charlevoix, on the north shore of the St. Lawrence, 78 miles below Quebec.

The block at this place was raised 19 feet.

**ST. LAURENT.**

On the Island of Orleans, 14 miles north-east of Quebec.

The roadway of this wharf was repaired, the slip completed, and repairs made to the face timbers and superstructure.

**ST. MICHEL.**

On the south shore of the St. Lawrence, 16 miles below Quebec.

Extensive repairs were made to the wharf at this place.

**TÉMISCOUATA ROAD.**

This road extends from River du Loup (*en bas*) to the boundary between the Provinces of Quebec and New Brunswick, a distance of 67 miles.

Some necessary repairs were made to the roadway, culverts and bridges.

**THREE RIVERS.**

The City of Three Rivers is at the mouth of the River St. Maurice which empties into the St. Lawrence on its northern side, 82 miles below Montreal.

An ice pier, 30 by 26 feet at the base and 17 feet 2 inches in height, was built during the year on the foreshore of the St. Lawrence at a point 1,600 feet above Dean's wharf.

**VAUDREUIL.**

In the County of Vaudreuil, on the River Ottawa, about 25 miles above Montreal.

During the fiscal year a wharf 324 feet in length, 20 feet in width, the outer block being 30 by 20 feet, was constructed at this place.

**ONTARIO.****BELLEVILLE.**

Is situated at the mouth of the River Moira, which flows into the Bay of Quinté, 43 miles west of Kingston.

The dredging of a channel to form an outlet for the Moira during freshets, referred to in the report of last year, was resumed by the contractor in August, 1887, and was still in progress at the close of the fiscal year.

Owing to the shallowness of the water and the hard nature of the material to be removed—rock—the work did not progress as rapidly as it otherwise would.

**BRIGHTON.**

Brighton is situated on Presqu'île Harbour, Lake Ontario, 22 miles from Belleville.

Between the 14th and 30th June, the dredge "Ontario" was engaged in deepening the channel off the wharves at this place to a depth of 12 feet.

**COBOURG.**

On Lake Ontario, 96 miles west from Kingston.

On 24th March last a contract was entered into for re-building a portion of the western pier, and at the close of the year the work was well in hand.

The Departmental dredge "Ontario" was engaged during May and June in cleaning up the inner harbour to 13 feet.

## GODERICH.

This harbour is on the east coast of Lake Huron, 68 miles above the entrance to the St. Clair River.

During the year the dredge "Challenge" was engaged in opening a passage to 18 feet depth through the shoal that forms off the entrance to the harbour, and to deepening to 14 feet alongside of the wharves in the harbour. Material was also excavated in the channel between the piers.

## KINCARDINE.

At the mouth of the River Penetangore, which empties into Lake Huron, 31 miles north of Goderich.

To prevent the north face of the southern pier from falling into the channel, the work of driving sheet piling along this face was begun in August, 1887, and at the close of the fiscal year was still in progress.

The "Challenge" dredged to a depth of 16 feet at low water between the piers to admit the large lake steamers, and removed an accumulation of deposit in the basin, the work taking from the 29th August to the 27th October to accomplish.

## KINGSTON.

The work of removing Point Frederick Shoal in Kingston Harbour was resumed on the 1st August, 1887, and carried on until the 29th October, when it closed for the season. Operations were again commenced on 29th May, 1888, and during the fiscal year ended 30th June 1888—at which date work was still in progress—2,818 cubic yards of rock were removed.

## KINGSVILLE.

On Lake Erie, about 25 miles east from the mouth of the River Detroit.

The work done at this harbour during the fiscal year ended 30th June, 1888, consisted in rebuilding a portion of the superstructure of the western pier, and in placing stone rip-rap on the west side of the western pier to prevent the structure being undermined by the action of the water.

## LITTLE CURRENT.

Little Current is at the passage between the Oloche and Great Manitoulin Islands, and on the direct route to Lake Superior for vessels taking the north channel of Lake Huron and Georgian Bay.

The work of increasing the width of the channel, referred to in the report of last year, was continued until the close of the working season of 1887. Although this difficult and at times dangerous channel, has been much improved, further work is required to make it safe for vessels passing up and down in any wind.

## M'GREGOR'S CREEK.

Empties into the River Thames, at the Town of Chatham, in the County of Kent.

The contract for the construction of 300 feet of pile protection work, referred to in the report of last year, was completed in September, 1887, and the work taken off the contractor's hands.

## MIDLAND.

Midland, Simcoe County, is the terminus of the Midland Division of the Grand Trunk Railway on Georgian Bay.

The wharfing, referred to in the report of last year as having been commenced, was completed and taken off the contractor's hands in February last.

**NEWCASTLE.**

Is on Lake Ontario, 47 miles east from Toronto.

The dredge "Ontario" worked for and at the expense of the Harbour Commissioners of this place between the 26th September and 23rd October, obtaining a depth of 14 feet.

**OAKVILLE.**

On Lake Ontario, in the County of Halton, 22 miles west of Toronto, and 18 miles east of Hamilton.

The work of rebuilding the outer 360 feet of the eastern pier, commenced during the previous fiscal year, was satisfactorily completed on the 12th October, 1887, and taken off the contractor's hands.

Connection was also made between the old portion of the eastern pier and the new work, and the channel between the east and west piers was dredged to a depth of 12 feet at low water.

**PORT ALBERT.**

Is on the eastern shore of Lake Huron, and about 9 miles north of Goderich.

The works at this place consist in rebuilding the upper part of the north pier, sheet piling 150 feet of the south face of the south pier and 150 feet of the east end of the north pier, and at the close of the fiscal year were well under way and nearing completion.

**PORT ARTHUR.**

Port Arthur, formerly Prince Arthur's Landing, is on Thunder Bay, Lake Superior.

The work of extending the breakwater 1,600 feet in an eastwardly direction, under contract, and which was in progress at the close of the last fiscal year, has been continued, is still in hand and is nearing completion.

A dredge was engaged for a short time in removing several lumps in the harbour between the breakwater and the wharves, and in deepening the channel at the elevator dock.

**PORT DARLINGTON.**

On Lake Ontario, about 42 miles east of Toronto.

The "Ontario" dredged between the 27th August and 24th September for and on account of the Harbour Commissioners of this place, giving a depth of 13 feet in the inner part of the harbour and 14 feet between the piers.

**PORT ELGIN.**

Port Elgin is in the County of Bruce, 24 miles north of Kincardine, on Lake Huron.

The work of constructing a groyne, extending from the present landing pier for a distance of 300 feet, and referred to in the report of last year, was completed.

Dredging was also performed over a portion of the harbour to give easier access to the landing pier.

**PORTAGE DU FORT BRIDGE.**

This bridge crosses the Ottawa at Portage du Fort, 60 miles above the City of Ottawa.

During the year the approach to the bridge on the Ontario side was widened to 20 feet, and the whole of the superstructure received two coats of paint. The work is now completed.



**PORT HOPE.**

Port Hope is on the north shore of Lake Ontario 8 miles to the westward of Cobourg.

During the fiscal year 126 feet of the superstructure of the east pier, between the two lights, and 370 feet of the superstructure of the railway wharf were repaired.

A bar, which had formed off the entrance to the harbour, was removed by the Government dredge "Ontario."

**PORTSMOUTH.**

Portsmouth is situated on the bay of that name, two miles west of Kingston.

The pier at this place proved on examination to be in a most dilapidated state, and to render it serviceable it required renewal over its whole length and to a depth of 7 feet and over of its original elevation.

At the close of the fiscal year 300 feet of work had been nearly completed, and the work was well in hand.

**RIDEAU RIVER, NORTH BRANCH.**

The "St. Louis" was put to work on 5th of June, 1888, in deepening the north branch of the Rideau to 7 feet from the canal to Kemptville, and at the close of the fiscal year was still engaged on that work.

**RIVIÈRE AUX PÊCHES.**

This river flows through the County of Essex and empties into Lake St. Clair.

A further length of 400 feet of pile protection work was built at the mouth of this river during the fiscal year.

**RIVER KAMINISTIGUIA.**

This river empties into Thunder Bay to the westward of Port Arthur.

During the working season further dredging was done in this river to improve the navigation and render it available for the largest class of vessels navigating these waters. The channel through the bar at the mouth of the river was also widened.

**RIVER OTTAWA—NARROWS ABOVE PEMBROKE.**

Dredging on the shoals in this portion of the river was resumed on 1st of August and continued till 28th of October, during which time 1,560 cubic yards of rock, boulders and gravel were removed, and 29 buoys placed in the channel.

**RIVER OTTAWA—RETAINING WALL, PARLIAMENT HILL.**

A retaining wall of cribwork, 310 feet in length and 23 feet in height was built at the foot of the hill between the Rideau Canal and the Dynamo House.

**RONDEAU.**

Rondeau Harbour, Kent County, is situated at Pointe aux Pins, on the north shore of Lake Erie, 140 miles above Port Colborne, the entrance to the Welland Canal.

Some slight repairs were made to the east and west piers and to the piling on the eastern side of the east pier.

**SAUGEEN RIVER PIER.**

This pier is at the mouth of the Saugeen River, which flows into Lake Huron at the village of Southampton.

The work of re-building the superstructure of the old pier over a length of 544 feet, and the construction of an additional crib 100 feet long, was completed in July, 1887, and the work taken off the contractor's hands.

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#### SOUTHAMPTON.

In the County of Bruce, on Lake Huron, 143 miles above Sarnia.

The outer 200 feet of the landing pier was rebuilt during the fiscal year, and a portion of the eastern breakwater was filled with stone and replanked.

#### SOUTH NATION RIVER.

This river takes its rise in the Township of Matilda, County of Dundas, and, after an irregular course of about 100 miles, flows into the Ottawa at Plantagenet.

About 12 miles below Casselman a rocky shoal 670 feet in length is found, otherwise the river would be navigable from Casselman to Plantagenet, a distance of 36 miles.

To render this stretch navigable, operations were commenced during the summer of 1887 in excavating a channel through this shoal, and during the fiscal year a depth of 6 feet at low water was obtained over a length of 170 feet, leaving 500 feet yet to be improved.

The dredge "Nipissing" worked from the 2nd to 19th November in removing a deposit of sand which completely blocked the entrance to the river.

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#### MANITOBA.

##### THE RED RIVER.

The Departmental dredge worked during the fiscal year in the West Slough, near West Selkirk, in the channel at the mouth of the river, at Salimony's channel, about 2½ miles from the mouth and at West Selkirk.

##### THE WHITE MUD RIVER.

The White Mud River empties into Lake Manitoba, 9 miles north of Westbourne.

The "Priestman" dredge belonging to the Department operated during the year on the shoal at the mouth of the river, and in the river itself between Totogan and McArthur's Landing.

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#### NORTH-WEST TERRITORIES.

##### RIVER SASKATCHEWAN.

The work of removing boulders and sandbars from the North Branch was continued during the past fiscal year.

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#### BRITISH COLUMBIA.

##### QOWICHAN RIVER.

The work of straightening and improving the channel of this river between the Railway Bridge and the Indian Village Bridge was continued during the past fiscal year.

##### ESQUIMALT GRAVING DOCK.

This dock was opened in July, 1887, by the entrance of H.M.S. "Cormorant," which was followed by H.M.S. "Caroline," and during the year four other vessels were docked and repaired.

The dock is in good order and has been supplied with electric light apparatus, and an ample supply of fresh water.

##### FRASER RIVER.

The work of improving the north channel across the sand banks at the mouth of the river was resumed on the 20th September, 1887.

During the season a further length of 1,900 feet of submerged dam was sunk, completely blocking the north end of the south channel. This work was undertaken with a view of forcing the full current of the river against the middle ground in the north channel, in order to cut a channel through that obstruction. These anticipations have, however, been only partially realized, and further works are required to gain the end sought.

From the mouth of the river upwards for a distance of 90 miles, the snag boat "Samson" removed 410 snags from the channel.

#### NICOL ROCK, NANAIMO HARBOUR.

Work was commenced in November, 1887, on the removal of the "Nicol Rock," which is a dangerous obstruction in the harbour, and at the close of the fiscal year the work was well in hand.

#### NICOOMEKEL RIVER.

The "cut off" excavated during 1886-87 at the big bend of the river has been enlarged. It is now 24 feet wide on top by about 10½ feet deep, affording increased facilities for navigation.

#### SERPENTINE RIVER.

The improvement of the water way of this river consisted in the excavation of a ditch or cut off between two points on the river, about one and a half miles long, thus not only relieving adjacent lands of surplus water, but affording settlers an outlet for their produce.

#### SOMAS RIVER.

Snags and other obstructions were removed from the mouth of the river to the steamboat landing.

#### VICTORIA HARBOUR.

The Dredge "Pacific" was engaged from the beginning of the fiscal year 1887-88 in removing clay and boulders surrounding the site of the Dredger Rock, work being stopped on the 24th December.

On the 23rd February, 1888 the dredge commenced work off Shoal Point, and continued there till 9th April.

### SURVEYS AND EXAMINATIONS.

During the year surveys and examinations were made at the undermentioned localities; and—with some exceptions—plans, reports and estimates have been submitted:—

	King's Co.,	P. E. I.		Cape Breton Co.	N.S.
Chapel Pier,	do	do	Bridgeport	do	do
Georgetown Pier	do	do	Grand Mira River	do	do
Murray Harbour	do	do	Main à Dieu	do	do
North Cardigan	do	do	Brulé,	Colchester Co.	do
St. Mary's Bay Pier	do	do	Parreboro',	Cumberland Co.	do
Souris	do	do	Pugwash	do	do
Quebec,	Prince Co.	do	South Joggins	do	do
Ministigash (Big)	do	do	Beaver River,	Digby Co.	do
do (Little)	do	do	Church Point	do	do
Belfast Pier,	Queen's Co.	do	Digby	do	do
China Point Pier	do	do	Grosses Coques	do	do
Fine Mile Creek	do	do	White's Cove	do	do
Victoria Pier	do	do	Salmon River,	Halifax Co.	do
Delap's Cove,	Annapolis Co.,	N. S.	Sheet Harbour	do	do
Hampton	do	do	Maitland,	Hants Co.	do
Parker's Cove	do	do	Noel	do	do
Port Lorne	do	do	Summerville	do	do
Livingstone Cove,	Antigonish Co.	do	Cheticamp,	Inverness Co.	do
Big Pond,	Cape Breton Co.	do	Low Point	do	do

McIver's Pond	Inverness Co.	N.S.	Lake St. John,	Chicoutimi Co.	N.S.
Port Hood	do	do	St. Fulgence	do	do
Whycocomagh	do	do	Grande Rivière,	Gaspé Co.	do
do (Indian reserve)	do	do	Îlot de Pabos	do	do
Morden,	King's Co.	do	Percé	do	do
Point Batty Island,	Pictou Co.	do	Pointe St. Pierre	do	do
West Arichat,	Richmond Co.	do	Ile Bizard,	Jacques Cartier Co.	do
Bay St. Lawrence,	Victoria Co.	do	River Jesus,	Laval Co.	do
French River	do	do	Grosse Isle,	Montmagay Co.	do
Little Narrows	do	do	St. Laurent,	Montmorency Co.	do
Neill's Harbour	do	do	Papineauville,	Ottawa Co.	do
Wreck Cove,	do	do	River Richelieu,	Richelieu Co.	do
Green Cove,	Yarmouth Co.	do	Georgeville,	Stanstead Co.	do
Edgett's Landing,	Albert Co.,	N. B.	River St. Maurice,	St. Maurice Co.	do
Gray's Island	do	do	Oacouna,	Temiscouata Co.	do
Stony Creek	do	do	Ile Verte	do	do
Clifton,	Gloucester Co.	do	Notre Jamedu Portage,	do	do
Grande Anse	do	do	Rivière Ile Verte	do	do
Mizonette Point	do	do	Baie de la Vallière,	Yamaska Co.	do
Richibucto,	Kent Co.	do	River Kamistiquia,	Algoma Co.,	Ont.
St. Louis	do	do	Port Arthur	do	do
Grey's Point,	King's Co.	do	Port Elgin,	Bruce Co.	do
Hampton	do	do	Rideau River (North		
Water's Wharf,	King's Co.,	N. B.	Branch).	Grenville Co.	do
Madawaska River,	Madawaska Co.	do	Owen Sound,	Grey Co.	do
Fairville,	St. John Co.	do	Oakville,	Halton Co.	do
St. John Breakwater	do	do	Bayfield,	Huron Co.	do
St. John Harbour	do	do	Goderich	do	do
Moncton,	Westmorland Co.	do	Pembroke,	Renfrew Co.	do
Pointe du Chêne	do	do	Collingwood,	Simcoe Co.	do
Lake St. Francis and	{ Beauharnois and } Que.		Millard	do	do
River St. Louis,	{ Huntingdon Cos. }		Toronto,	do	do
River St. Louis,	Beauharnois Co.	do	Burlington Channel,	York Co.	do
Little Bonaventure,	Bonaventure Co.	do	Union Suspension	Lake Ontario.	
New Carlisle	do	do	Bridge,	River Ottawa.	
Paspebiac	do	do	Belly River,		N. W. T.
Longue Pointe and			Medicine Hat		do
Boucherville,	Chambly Co.	do	Sheep Creek		do
St. Lambert	do	do	Bigg's Portage,		R.O.
Bay St. Paul,	Charlevoix Co.	do	Columbia River		do
Pointe au Perrat	do	do	Harrison River		do
Rivière Noire	do	do	Vancouver		do

## DREDGING.

## THE "ST. LAWRENCE."

After completion of repairs this dredge arrived at Richibucto, N.B., on the 13th July, 1887, and almost immediately commenced to work in improving the North Channel, one of the outer entrances to the harbour, and was engaged until the 7th September, up to which date work had been done over a length of 360 feet, which had been widened to 150 feet, and to a depth of 14 feet at low water; a quantity of 9,362 cubic yards of sand having been removed.

Between the 15th and 30th of September dredging was carried on off the end of the wharf at Port Hood, Inverness County, N. S., when a depth of 12 feet at low water was obtained, and 2,800 cubic yards of sand were removed.

On the 3rd October work was commenced in the Middle River, Pictou County, N. S., opposite the Black Diamond Wharf, and continued until the 18th, when it was brought to a close, a cut 360 feet in length, 70 feet in width and to a depth of 22 feet having been made, and 7,000 cubic yards of mud and oyster shells having been removed.

During the winter the boiler was lifted, stayed and thoroughly repaired, and several repairs were made to the vessel and machinery.

On the 14th May work was for the season began at the railway wharf, Pictou Harbour, and was continued until the 19th when a depth of 17 feet over an area of 900 square feet had been obtained by the removal of 2,275 cubic yards of mud and clay.

At the Market Wharf this dredge worked between the 20th of May and the 22nd of June, in making a channel from the main channel in the harbour towards the wharf, a distance of 810 feet, leaving a width of 60 feet and a depth of 15 feet, where before there existed but 7 feet. The material removed was clay, and the quantity amounted to 14,700 cubic yards.

At the close of the fiscal year the dredge was being placed in order to sail for Little Glace Bay, Cape Breton County, N. S.

The total quantity removed amounted to 36,137 cubic yards, at a cost of 30.55 cents per cubic yard.

The sum of \$34 90 was received from the sale of a quantity of old materials and a boat, and placed to the credit of the Hon. Receiver General.

#### THE "CANADA."

At the close of the fiscal year the "Canada" was engaged in improving the channel in the harbour of Yarmouth, N. S., and that work was continued until the 4th of November, when operations ceased and the dredge was placed in winter quarters.

The usual necessary repairs to the vessel and machinery having been effected, dredging in the channel was resumed early in May, 1838, and continued until the 30th June, up to which date there had been removed during the year 31,050 cubic yards of clay, at a cost of 30.10 cents per cubic yard.

From the sale of old rope the sum of \$4 60 was received and placed to the credit of the Receiver General.

#### THE "NEW DOMINION."

At the close of the previous fiscal year this dredge was engaged in opening a channel to the public wharf at the head of Belleisle Bay, King's County, N. B., and continued on that work until the 18th July, when it was sent to the Grand Lake, Queen's County, and resumed operations in improving the channel through the flats at that place, remaining until 10th September, having removed 21,910 cubic yards of clay, sawdust, &c.

After repairs were effected dredging was resumed on the 20th September at Belleisle, and on the 15th October the channel to the wharf was completed, 15,205 cubic yards of sand and clay having been removed.

This dredge wintered at St. John, N. B., where necessary repairs were made, and on the 18th June, 1888, it was taken to Hampton, King's County, to operate in deepening over the shoal in the Kennebecassis, below the village and up to the 30th June 3,675 cubic yards of fine sand had been removed.

The total quantity of materials removed during the year amounted to 40,790 cubic yards, which was done at a cost of 15.47 cents per cubic yard.

The sum of \$10 60 was received from the sale of old materials and placed to the credit of the Receiver General.

#### THE "CAPE BRETON."

This dredge did not commence work until the 3rd October, 1887, after its arrival at Wallace, Cumberland County, N. S., where it remained until the 5th November and improved the channel of the ferry at that place, and removed obstructions off the wharves of the "Union Freestone" and "Wallace Greystone" Companies, the quantity of material removed amounting to 9,950 cubic yards.

On the 8th November this dredge left Wallace for Pictou, and on the 9th, when off Cape John a heavy storm was met with, and it had to be abandoned, sinking in 60 feet of water, the crew losing everything they had on board, and barely escaping with their lives. The scows were saved and towed to Pictou.

Up to the time of its loss this dredge had done 9,950 cubic yards of work during the fiscal year, at a cost of 46.78 cents per cubic yard.

The sum of \$59.66 was received from the sale of condemned materials and placed to the credit of the Receiver General.

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THE "PRINCE EDWARD."

At the commencement of the fiscal year the "Prince Edward" was engaged in deepening the channel at Tignish, P.E.I. and remained there until the 27th August, when it was taken to Charlottetown, where it was hauled out of the water, and the careful examination which was made showed that the repairs required were very extensive, and as an appropriation was necessary to defray their cost, the dredge remained unused during the remainder of the fiscal year.

The only work done during the year was at Tignish, where 3,775 cubic yards of gravel, sand and clay were removed at a cost of \$1.56 per cubic yard.

THE "GEORGE MCKENZIE."

During the month of July, 1887, this dredge was at Aspy Bay, Victoria County, N.S., and on the 1st August it was removed to Cheticamp, Inverness County, where it arrived and resumed work on the channel. Up to the 21st October, 16,400 cubic yards of sand, gravel, and stone were removed and a depth of 13 feet made into the harbour. At this last date the weather became unfit for working in so exposed a situation, and the whole of the plant was removed to Hawkesbury, and placed on the Marine Railway for wintering and repairs, which on examination, were found to be very large, so much so that for want of funds only temporary repairs to the dredge and scows could be effected to enable their being sent to McNair's Cove, Antigonish County, at the commencement of the current fiscal year.

The only work done by this dredge during the year was at Cheticamp, where the quantity of materials removed was 16,400 cubic yards, at a cost of 46 $\frac{1}{4}$  cents per yard.

"THE CHALLENGE."

On the first July, 1887, this dredge was working at Goderich, Ontario, in opening a passage to 18 feet depth, through the shoal that forms off the entrance to the harbour, and in deepening to 14 feet alongside of the wharfing inside the harbour, closing the work on the 28th August, when 14,380 cubic yards of sand and gravel had been removed.

On the 29th August the plant was towed to Kincardine, where it remained until the 27th October, deepening the channel between the piers to 16 feet below zero to admit the large lake steamers, and in cleaning out deposit which had accumulated in the basin to permit vessels to lie and load with salt. The work done here consisted in the removal of 11,550 cubic yards of sand, clay and hardpan.

The plant wintered at Goderich, where repairs were made, and on the 7th May work was resumed on the shoal which had again formed off the entrance, and also in removing deposited material which had accumulated between the channel piers. This occupied until the 13th June, when a further quantity of 6,270 cubic yards of sand were removed. On the 14th the dredge and scows were towed to Kincardine, where work was commenced in removing the material which had accumulated in the basin and between the channel piers, and up to the close of the fiscal year a further quantity of 7,320 cubic yards of sand and clay were removed.

The dredge is in a good state of repair, but the scows, owing to old age and hard work, must be renewed. The tug is, with the exception of some portions of its machinery, which must be renewed during the ensuing winter, in very good order.

The total quantity of work done by this dredge during the year was 39,520 cubic yards, at a cost of 13 $\frac{1}{4}$  cents per cubic yard.

THE "NIPISSING."

At the close of the last fiscal year the "Nipissing" was engaged in straightening and deepening the channel of the Richelieu, about half a mile below the village of St. Antoine, between the island and the western shore, and remained there until the 13th August, when a channel 9 feet in depth had been opened, and 14,940 cubic yards of clay, hardpan and stone removed.

Between the 17th August and 3rd September, work was done in the upper arm of the River Chateauguay in making 8 feet of depth, to obtain which a large amount of blasting had to be done, as many boulders of large size were met with which could not be got rid of in any other way.

On the 9th September work was commenced in the Gatineau, about one-third of a mile below the C.P.R. bridge, and on the north side of the river, where, owing to the lowness of the water and the slides which had taken place in the bank of the river, the channel had become filled to such an extent that loaded barges could not pass. A clear channel was, however, formed, and a cut was also made through a shoal off the ferry wharf at Gatineau Point, a depth of 9 feet having been obtained by the removal of 11,140 cubic yards of sand and clay, mixed with a very large quantity of sawdust and the chips produced by grinding slabs and edgings at the mills on the river, which is simply a mistake and should be prevented.

On 2nd November work was commenced in removing a deposit of sand which almost completely blocked the entrance into the South Nation River. The cutting made was 875 feet in length, 35 feet in width, and 8 feet deep, and was completed on the 19th November, when 6,018 cubic yards of clay and sand were removed.

During the winter repairs were made to the dredge and scows, and the machinery of the tug "Dennis" was transferred to a new hull which had been built at Ottawa.

On the 23rd May, work was commenced in opening a channel into Papineauville Bay from the Ottawa, and at the close of the fiscal year good progress had been made, and 14,895 cubic yards of clay and sand removed.

The total quantity removed during the year amounted to 50,848 cubic yards, at a cost of 16 $\frac{1}{2}$  cents per cubic yard.

#### THE "ONTARIO."

This dredge was at Port Hope at the commencement of the fiscal year, and remained there until the 25th August, having removed a bar which had formed at the mouth of the harbour, and taken away 12,600 cubic yards of clay and sand.

Between the 27th August and 24th September work was done at Port Darlington for and on account of the Harbour Commissioners of that place, and a depth of 13 feet was made in the inner part of the harbour, and 14 feet between the piers and the portion of the harbour towards Lake Ontario, and 13,080 cubic yards of sand, clay and stone were removed.

At Newcastle work was done at the expense of the Harbour Company between the 26th September and 22nd October, and a depth of 14 feet was obtained by the removal of 6,840 cubic yards of clay and sand.

During removal to winter quarters at Cobourg the plant was caught in the storm of the 23rd October, and one scow received much damage and had to be taken to Newcastle, the remainder getting to Cobourg, and on arrival there it was found that the tug "Sir John" had received such an amount of damage that it had to be taken in April to St. Catharines for repairs.

On 15th May work was commenced in clearing up the inner harbour to 13 feet, and up to 13th June 5,820 cubic yards of sand were removed.

Between the 14th and 30th June the plant was engaged in deepening the channel off the wharves at Brighton to 12 feet, and removed 5,130 cubic yards of mud and gravel.

The total quantity of materials removed during the year amounted to 43,470 cubic yards, at a cost of 13 $\frac{1}{8}$  cents per cubic yard.

#### THE "QUEEN."

On the 1st July, 1887, this dredge was at Laprairie engaged in opening a new channel from the main channel in the St. Lawrence to the public wharf, and remained until the 1st September, up to which date a depth of 7 feet had been obtained, and 8,604 cubic yards of clay and stone removed.

On the 2nd September work was commenced on the upper arm of the Chateauguay, the "Nipissing" having been removed to the Gatineau, and continued until the close of navigation, when a channel 775 feet in length was completed, and 10,163 cubic yards of sand, clay, gravel and stone were removed, which, added to the work done by the "Nipissing," makes a total at that place of 14,018 cubic yards.

This dredge and scows wintered in Montreal, where it received a general overhauling prior to the 21st May, when it was sent to work on the shoals in the Richelieu below St. Antoine, and at the close of the fiscal year had removed 5,088 cubic yards of clay.

The total amount of work done during the year was 23,855 cubic yards, at a cost of 35 $\frac{1}{4}$  cents per cubic yard.

#### THE "ST. LOUIS."

This dredge was placed at work early in July, 1887, on the "feeder" or cut between the St. Lawrence and the River St. Louis, and on the 16th October the work was finished, and the dredge brought back to Ottawa.

On the 6th June work was commenced in deepening the north branch of the Rideau to 7 feet, from the canal to Kemptville, and was engaged thereon at the close of the fiscal year.

On the "feeder" 16,390 cubic yards of clay, and on the Rideau 3,000 cubic yards of fine sand, making a grand total for the year of 19,390 cubic yards were removed at a cost of 20 $\frac{1}{4}$  cents per cubic yard.

#### THE "WINNIPEG."

At the commencement of the fiscal year the "Winnipeg" was engaged in dredging in the west slough, near West Selkirk, in order to allow steamboats and craft plying on the Red River better access to the industries on the slough, and afford increased accommodation for boats wintering at that place.

On the 1st August, 1887, work was commenced in the channel at the mouth of the Red River, and continued until the end of the month, when the plant was removed to "Salimony's Channel," about two and a-half miles from the mouth where a cut was made through the shoal, giving 12 feet in depth and a width of 50 feet at the top.

Owing to the expenditure of the appropriation, the dredging plant was laid up at the end of September. In June, 1888, it was placed to deepen the river front at West Selkirk, between Maria Street and Manitoba Avenue, the work being brought to completion on 30th June.

The total quantity removed during the year amounted to 53,880 cubic yards, at a cost of 17 cents per cubic yard.

#### THE "PRIESTMAN."

During 1887 only a small amount of work was done by this dredge on the White Mud River, and operations were conducted between the 4th August and 29th September only.

In June, 1888, this dredge was placed to work in removing shoals in the river between Totogan and McArthur's Landing, and at the close of the year was engaged thereat.

The work done during the year amounted to 9,317 cubic yards, at a cost of 25 cents per cubic yard.

#### THE "PACIFIC."

Between the 1st July and 24th December, 1887, this dredge was employed in removing clay and boulders surrounding the site of Dredger Rock, Victoria Harbour, B.C.

On the 23rd February following, work was resumed off Shoal Point, Victoria Harbour, and continued until 9th April when the plant was removed to Requinault.



for the purpose of deepening the entrance to the graving dock, and was engaged on that work at the close of the fiscal year.

The work done by this dredge during the year though comparatively small in amount, was done in unfavourable localities and where, as at Dredger Rock, explosives had to be used to facilitate the removal of boulders, and also in the removal of the remains of piles at the graving dock.

The total quantity amounted to 14,773 cubic yards, at a cost of 86½ cents per yard.

#### THE "SAMSON."

The snag boat "Samson" was employed up to the close of 1887 in connection with the works at the mouth of the Fraser River.

Between the 11th February and 30th June, 1888, this boat was engaged in removing snags from the channel of the Fraser from its mouth up to Harrison River, a distance of about 90 miles, and 410 of these obstructions were removed.

#### DREDGING PLANT.

The dredging plant belonging to the Department is as follows:—

##### *In the Maritime Provinces.*

The steam hopper dredge, "St. Lawrence."

do do "Canada."

The dipper do "New Dominion" and six scows.

do do "Prince Edward" and four scows.

do do "George McKenzie" and three scows; also five scows which were attached to the lost dredge, "Cape Breton."

##### *In Quebec.*

The dipper dredge "Queen of Canada" and two scows.

do "Nipissing," two scows and tug "Ottawa."

do "St. Louis" and two scows.

The stone lifter, "Baillairgé."

##### *In Ontario.*

The dipper dredge "Challenge," two scows and tug "Trudeau."

do "Ontario," two scows and tug "Sir John."

##### *In Manitoba.*

The dipper dredge "Winnipeg," two scows and tug "Sir Hector."

The bucket dredge, "Priestman," and tug "Victoria."

##### *In British Columbia.*

The elevator dredge "Pacific," six scows and tug "Georgie."

The snag boat "Samson."

## CLASSIFICATION of Disbursements of the following Dredges, during the Year ended 30th June, 1888.

## "ST. LAWRENCE."

Items.	July.	August.	September.	October.	November.	Dec.	Jan.	Feb.	Mar.	Aprl.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	689 48	508 33	508 33	508 33	919 84	1,092 98	581 11	565 84	472 58	513 58	519 08	.....	6,878 98
Coal.....	289 40	141 60	.....	.....	49 48	.....	.....	.....	.....	.....	.....	.....	484 48
Provisions.....	208 21	95 68	270 18	102 12	86 87	223 72	38 15	.....	.....	.....	4 60	87 26	1,089 91
Stores.....	168 24	.....	.....	.....	1 20	.....	.....	.....	.....	.....	.....	.....	168 24
Equipment.....	.....	.....	.....	.....	.....	.....	.....	3 76	.....	.....	.....	.....	4 95
Water.....	2 40	15 40	.....	3 60	.....	.....	.....	.....	.....	.....	.....	.....	21 40
Repairs.....	322 80	.....	.....	.....	.....	93 57	100 00	.....	.....	117 62	588 00	.....	1,221 99
Pilotage.....	48 00	84 00	16 00	37 50	.....	.....	24 00	.....	.....	.....	40 00	.....	280 50
Wharfage.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	77 20	.....	.....	117 20
Contingencies.....	8 54	31 16	.....	5 00	.....	10 78	8 87	.....	.....	.....	4 80	.....	69 15
Totals.....	1,735 07	825 98	925 02	656 55	1,057 16	1,421 05	752 13	569 09	472 58	709 40	1,156 48	67 26	10,346 77
Working expenses.....	1,291 48	825 98	925 02	656 55	50 65	.....	.....	252 33	252 33	.....	568 48	67 26	4,893 08
Repairs, extraordinary.....	440 59	.....	.....	.....	1,006 51	1,421 05	752 13	316 76	220 25	709 40	588 00	.....	5,453 69
Totals.....	1,735 07	825 98	925 02	656 55	1,057 16	1,421 05	752 13	569 09	472 58	709 40	1,156 48	67 26	10,346 77

## CLASSIFICATION OF Disbursements of the following Dredges, &amp;c.—Continued.

## "CANADA."

Items.	July.	August.	September	October.	November	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	773 64	398 55	390 33	397 52	259 46	237 33	167 33	167 33	167 33	301 42	411 27	.....	3,651 51
Coal.....	63 00	406 12	.....	.....	312 20	.....	.....	.....	.....	.....	.....	.....	771 32
Provisions.....	38 21	180 31	100 52	131 84	12 00	2 5 45	.....	.....	.....	.....	.....	.....	688 36
Stores.....	185 43	54 42	65 48	.....	.....	.....	.....	.....	.....	.....	21 93	.....	327 36
Equipment.....	78 33	12 65	38 50	99 40	.....	.....	.....	.....	.....	.....	20 55	.....	219 43
Water.....	.....	1 00	6 48	.....	.....	0 50	.....	2 52	.....	.....	.....	.....	10 50
Repairs.....	995 67	10 40	769 73	75 00	22 49	.....	62 85	257 15	253 55	.....	44 70	.....	2,491 54
Pilotage.....	52 50	58 00	48 00	51 00	10 50	.....	.....	.....	.....	.....	38 00	.....	258 50
Wharfage.....	.....	.....	.....	.....	.....	45 00	.....	.....	.....	.....	.....	.....	45 00
Contingencies.....	.....	10 40	14 14	.....	.....	134 00	.....	2 94	.....	.....	.....	.....	161 48
Totals.....	2,76 81	1,131 85	1,433 18	745 76	616 15	632 28	230 18	429 94	420 88	301 42	536 45	.....	8,654 90
Working expenses.....	924 88	1,121 45	572 97	576 89	591 68	167 09	167 38	182 83	167 33	.....	418 13	.....	4,880 56
Repairs, ordinary.....	.....	10 40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	10 40
do extraordinary.....	1,251 93	.....	860 21	168 87	34 49	465 19	62 85	247 11	283 55	301 42	118 32	.....	3,763 94
Totals.....	2,176 81	1,131 85	1,433 18	745 76	616 15	632 28	230 18	429 94	420 88	301 42	536 45	.....	8,654 90

## CLASSIFICATION of Disbursements of the following Dredges, &amp;c.—Continued.

## "NEW DOMINION."

Items.	July.	August.	September.	October.	November.	Dec.	Jan.	Feb.	Mar.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	806 86	507 17	493 96	393 49	155 00	157 50	155 00	152 50	157 50	296 26	157 50	.....	3,432 74
Coal.....	200 00	108 75	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	308 75
Stores.....	73 88	.....	82 35	2 50	22 88	.....	.....	.....	.....	.....	4 08	.....	185 99
Equipment.....	.....	.....	6 00	.....	12 78	.....	.....	.....	.....	.....	.....	.....	18 78
Water.....	7 12	.....	.....	.....	.....	.....	.....	.....	.....	.....	7 60	.....	14 72
Repairs.....	82 43	.....	184 82	.....	.....	17 93	.....	.....	138 10	.....	168 06	.....	579 83
Towage.....	339 00	191 00	171 00	506 00	.....	.....	.....	.....	.....	.....	.....	.....	1,208 00
Contingencies.....	.....	.....	.....	.....	12 64	.....	.....	.....	.....	.....	.....	.....	12 64
Totals.....	1,509 29	807 92	938 13	902 29	203 30	175 43	155 00	152 50	286 60	296 26	386 20	.....	5,760 95
Working expenses.....	1,426 86	807 92	670 96	902 29	22 88	.....	155 00	152 50	157 50	.....	157 50	.....	4,453 41
Repairs extraordinary.....	82 43	.....	267 17	.....	180 42	175 43	.....	.....	138 10	296 26	177 73	.....	1,307 54
Totals.....	1,509 29	807 92	938 13	902 29	203 30	175 43	155 00	152 50	286 60	296 26	386 23	.....	5,760 95

## "CAPE BRETON."

Wages.....	310 00	157 50	289 16	580 00	303 08	.....	3 40	.....	.....	.....	.....	.....	1,839 74
Coal.....	.....	.....	.....	.....	66 86	.....	.....	.....	.....	.....	.....	.....	70 26
Stores.....	329 59	.....	.....	88 11	1 69	.....	.....	.....	.....	.....	.....	.....	419 59
Water.....	6 60	.....	.....	4 66	18 50	.....	.....	.....	.....	.....	.....	.....	28 75
Repairs.....	940 68	.....	.....	.....	54 90	25 07	.....	.....	.....	.....	.....	.....	1,030 55
Towage.....	.....	.....	.....	125 00	944 75	.....	.....	.....	.....	.....	.....	.....	1,069 75

[illegible]

**"PRINCE EDWARD."**

	612 76	497 75	491 50	424 20	553 53	157 50	155 00	152 50	157 50	152 50	157 50	3,531 24
Wages.....	118 92	121 88	36 00	30 00	2 40	10 00	10 00	10 00	10 00	10 00	10 00	128 92
Ooal.....	36 00	56 70	50 00	95 01	1 28	7 97	163 47	152 50	157 50	152 50	157 50	131 68
Store .....	7 50	9 36 40	1,820 75	659 24	563 19	1,820 75	1,820 75	1,820 75	1,820 75	1,820 75	1,820 75	128 10
Repairs .....												207 50
Pilvage.....												150 00
Towage.....												1,091 44
Contingencies .....												9 23
Total's.....	620 26	1,820 75	551 20	659 24	563 19	1,820 75	1,820 75	1,820 75	1,820 75	1,820 75	1,820 75	5,355 11
Working expenses... Repairs, extraordi- nary .....	457 76	1,820 75	551 20	235 04	3 88	.....	155 00	152 50	157 50	152 50	157 50	3,843 41
	162 50	.....	.....	424 20	539 53	185 47	.....	.....	.....	.....	.....	1,511 70
Totals.....	620 26	1,820 75	551 20	659 24	563 19	185 47	155 00	152 50	157 50	352 50	157 50	5,355 11

## CLASSIFICATION of Disbursements of the following Dredges, &amp;c.—Continued.

## "GEO. MCKENZIE."

Items.	July.	August.	September.	October.	November.	Dec.	Jan.	Feb.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages.....	369 17	478 25	492 64	498 15	233 89	179 60	155 00	152 50	157 50	374 10	166 00	.....	3,240 80
Coal.....	147 00	13 50	.....	114 17	.....	.....	25 38	2 50	.....	.....	.....	.....	302 55
Stores.....	.....	.....	.....	4 32	.....	.....	.....	.....	.....	.....	49 43	.....	53 75
Equipment.....	.....	3 25	.....	.....	.....	.....	.....	.....	.....	.....	106 90	.....	110 15
Water.....	3 25	45 00	60 00	27 50	.....	.....	.....	.....	.....	.....	.....	.....	135 75
Repairs.....	91 54	.....	.....	4 50	48 98	.....	.....	37 27	41 52	.....	33 00	.....	256 81
Towage.....	410 00	.....	680 00	718 88	895 02	10 00	.....	.....	.....	.....	.....	.....	2,693 90
Wharfage.....	2 00	.....	.....	.....	30 00	.....	.....	.....	.....	.....	.....	.....	32 00
Contingencies.....	4 50	.....	.....	.....	17 74	.....	.....	.....	.....	.....	.....	.....	23 34
Totals.....	1,027 46	540 00	1,212 64	1,357 52	1,225 63	189 60	180 38	192 27	199 02	374 10	349 33	.....	6,847 95
Working expenses.	773 92	540 00	1,212 64	1,357 52	1,176 65	.....	155 00	152 50	157 50	.....	160 00	.....	5,685 73
Repairs, extraordinary.	253 54	.....	.....	.....	48 98	189 60	25 38	39 77	41 52	374 10	189 33	.....	1,162 22
Totals.....	1,027 46	540 00	1,212 64	1,357 52	1,225 63	189 60	180 38	192 27	199 02	374 10	349 33	.....	6,847 95

## "CHALLENGE."

Wages.....	385 00	385 00	385 00	430 62	30 00	30 00	30 00	30 00	30 00	180 00	388 14	395 00	2,708 76
Coal.....	195 24	229 49	.....	.....	.....	.....	.....	.....	.....	309 69	254 02	.....	998 42
Wood.....	3 25	.....	4 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	7 75
Provisions.....	100 00	100 72	100 00	100 00	.....	.....	.....	.....	.....	29 78	91 96	100 00	593 68
Stores.....	43 24	19 82	10 10	36 66	.....	.....	.....	.....	.....	47 72	47 72	.....	166 79
Equipment.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	41 25	19 04	.....	50 29
Repairs.....	53 93	14 36	8 80	164 69	.....	.....	.....	.....	.....	96 57	41 50	7 75	399 60

Contingencies.....	3 00	107 83	16 28	4 40	.....	.....	.....	.....	13 21	2 00	104 83	7 80	287 35
Totals .....	782 84	867 22	534 68	736 37	30 00	30 00	30 00	30 00	43 21	670 76	947 71	510 05	5,193 64
Working expenses.	728 71	842 86	515 88	571 68	30 00	30 00	30 00	30 00	43 21	572 19	906 21	502 30	4,803 04
Repairs, ordinary...	53 93	14 36	8 80	.....	.....	.....	.....	.....	.....	98 57	41 50	7 76	241 91
do extraordinary ..	.....	.....	.....	161 69	.....	.....	.....	.....	.....	.....	.....	.....	194 69
Totals .....	782 64	857 22	534 68	736 37	30 00	30 00	30 00	30 00	43 21	670 76	947 71	510 05	5,192 64

## "NIPISSING."

Wages .....	390 16	427 89	442 23	438 56	359 67	118 00	151 13	.....	.....	255 37	389 20	410 00	3,380 21
Coal .....	287 60	132 70	204 26	13 08	616 95	.....	.....	.....	.....	.....	.....	682 65	1,935 14
Wood .....	.....	.....	.....	.....	23 41	.....	.....	.....	.....	.....	.....	.....	22 41
Provisions.....	101 00	105 17	102 64	107 00	86 68	.....	.....	.....	.....	.....	31 01	100 00	638 48
Stores .....	37 20	24 00	9 20	35 82	.....	.....	.....	.....	.....	.....	19 10	3 79	131 11
Equipment .....	3 50	16 48	25 63	.....	.....	.....	.....	.....	.....	34 48	112 49	.....	192 58
Repairs.....	2 28	12 50	8 46	45 00	1 75	6 08	41 00	.....	.....	1,403 20	405 61	21 46	1,946 33
Pilotage.....	20 00	20 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	40 00
Towage .....	.....	160 60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100 00
Contingencies.....	.....	10 55	2 55	.....	.....	.....	.....	.....	.....	10 31	.....	.....	23 41
Totals .....	811 61	851 29	792 96	637 46	1,087 41	123 08	192 13	.....	.....	1,703 36	957 44	1,217 90	8,404 67
Working expenses.	839 36	838 79	784 51	592 46	1,085 69	118 00	151 13	.....	.....	300 18	551 80	1,196 44	6,438 34
Repairs, ordinary...	2 25	12 50	8 46	45 00	1 75	6 08	41 00	.....	.....	390 86	405 64	21 46	833 99
do extraordinary ..	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,112 34	.....	.....	1,112 34
Totals .....	841 61	851 29	792 96	637 46	1,087 44	123 08	192 13	.....	.....	1,703 36	957 44	1,217 90	8,404 67

## Classification of Disbursements of the following Dredges, &amp;c.—Continued.

## "ONTARIO."

Items.	July.	August.	September.	October.	November.	Dec.	Jan.	Feb.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages .....	419 17	350 00			30 00	150 00	90 00	90 00	90 00	205 00	378 39	380 00	2,212 56
Coal .....		470 00								30 00		505 00	1,005 00
Wool .....												2 50	2 50
Provisions .....	97 42	100 00									100 00	101 31	398 73
Stores .....	44 68	33 00		49 49							81 17	10 48	218 80
Equipment .....	4 75	15 00								120 32	53 59	41 68	235 34
Repairs .....	45 00	5 25		86 84	302 65					834 54	31 85	5 30	1,314 43
Pilotage .....											10 00	6 00	16 00
Contingencies .....		5 01		20 30					10 65		29 63	110 15	275 74
Totals .....	611 02	1,008 26	100 00	155 63	332 65	150 00	90 00	90 00	100 65	1,189 86	687 63	1,162 40	5,679 16
Working expenses .....	566 02	1,003 01	100 00	69 79	30 00	150 00	90 00	90 00	100 65	355 32	652 78	1,157 10	4,364 67
Repairs, ordinary .....	45 00	5 25		86 84	2 65					335 56	34 85	5 30	513 45
do extraordinary .....					300 00					498 98			798 98
Totals .....	611 02	1,008 26	100 00	156 63	332 65	150 00	90 00	90 00	100 65	1,189 86	687 63	1,162 40	5,679 10

## "QUEEN."

Wages .....	332 50	350 62	330 00	330 00	217 70	30 00	30 00	30 00	30 00	234 76	308 39	337 17	2,621 13
Coal .....	59 60	365 69	109 34		387 43						324 84		1,372 30
Wool .....	3 42	12 55											15 95
Provisions .....	91 00	90 4	93 61	90 00	43 26						51 00	90 33	552 65
Stores .....	16 86	65 14	60 74	6 50	8 38	2 75				149 48	17 85	10 41	338 15
Equipment .....		2 50	4 85							30 28			155 32
Repairs .....	25 10	140 11	118 07	6 84	15 63		10 80			985 79	89 40	110 68	1,502 44
Pilotage .....					5 30								5 30



Towage .....	310 00	310 00	10 60	191 05	21 50	8 76	170 00	300 00	191 05
Contingencies .....	808 83	1,352 06	1,036 65	32 76	30 00	1,399 04	1,082 19	818 60	1,970 26
Totals .....									8,514 55
Working expenses..	843 75	1,211 95	903 59	32 76	30 00	413 25	992 79	707 92	7,012 11
Repairs, ordinary ..	25 10	142 11	118 07	15 63	10 80	287 08	89 40	110 68	813 73
do extraordinary ..						693 71			683 71
Totals .....	868 85	1,352 06	1,026 65	32 75	30 00	1,393 04	1,082 19	818 60	8,514 55

## "ST. LOUIS."

Wages .....	219 94	401 55	495 55	37 50	37 50	111 00	210 50	319 25	2,004 44
Coal .....	34 00	105 00	74 67	37 50	27 00			295 10	501 77
Provisions .....	34 00	34 00	34 00	34 00	34 00	12 78	12 78	71 31	5 00
Stores .....	19 80	21 48	13 22	13 22	13 22	14 62	14 62	9 50	220 09
Equipment .....	29 91	5 30	9 33	9 33	9 33	15 50	14 75	60 88	57 82
Repairs .....	2 50	1 75	1 75	1 75	1 75	6 81	6 81	5 31	125 65
Towage .....	300 00	100 00	100 00	100 00	100 00	2 00	2 00	260 00	45 78
Contingencies .....		429 55	429 55	429 55	429 55	2 00	2 00	260 00	102 50
Totals .....	606 24	575 73	615 30	37 50	37 50	138 50	259 46	1,021 36	991 55
Working expenses..	578 33	575 73	615 55	37 50	37 50	138 50	252 65	1,016 04	4,008 82
Repairs, ordinary ..	29 91		1 75	37 50	37 50		6 81	5 31	45 78
Totals .....	606 24	575 73	615 30	37 50	37 50	138 50	259 46	1,021 36	4,054 60

[1888]

## CLASSIFICATION OF Disbursements of the following Dredges, &amp;c.—Continued.

## "WINNIPEG."

Items.	July.	August.	September.	October.	November.	Dec.	Jan.	Feb.	March.	April.	May.	June.	Grand Totals.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Wages .....	570 00	570 00	570 00	228 83	80 00	80 00	80 00	80 00	80 00	279 83	540 00	570 00	3,726 66
Coal .....	693 17	707 35	655 72	.....	.....	26 27	.....	.....	.....	.....	.....	738 85	2,795 09
Wood .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	25 27
Provisions .....	292 28	292 28	282 85	96 64	.....	.....	.....	.....	.....	.....	243 57	292 88	1,490 48
Equipment .....	294 98	.....	81 18	.....	.....	.....	.....	.....	.....	.....	342 42	527 50	1,249 08
Repairs .....	.....	31 70	215 72	.....	.....	.....	.....	.....	.....	92 33	138 72	.....	476 47
Contingencies .....	235 42	166 28	179 03	100 98	.....	.....	.....	.....	.....	.....	181 86	108 57	986 12
Totals .....	2,085 86	1,751 58	1,987 52	424 45	80 00	105 27	80 00	80 00	80 00	372 16	1,444 56	2,227 78	10,719 17
Working expenses..	2,085 86	1,719 88	1,771 80	424 45	80 00	105 27	80 00	80 00	80 00	279 83	1,307 84	2,227 78	10,242 70
Repairs, ordinary..	.....	31 70	.....	.....	.....	.....	.....	.....	.....	.....	81 45	.....	93 15
do extraordinary	.....	.....	215 72	.....	.....	.....	.....	.....	.....	92 33	75 27	.....	333 32
Totals .....	2,085 86	1,751 58	1,987 52	424 45	80 00	105 27	80 00	80 00	80 00	372 16	1,444 56	2,227 78	10,719 17

## "PRIESTMAN."

Wages .....	120 00	298 00	270 00	180 00	30 00	30 00	75 00	30 00	30 00	110 00	180 00	370 00	1,893 00
Coal .....	.....	264 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	264 00
Wood .....	.....	.....	34 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	34 50
Provisions .....	.....	208 21	188 57	62 68	.....	.....	.....	.....	.....	.....	97 47	188 57	745 45
Equipment .....	.....	55 40	28 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	83 00
Repairs .....	.....	3 00	115 61	.....	.....	.....	.....	.....	.....	.....	.....	.....	118 61
Contingencies .....	.....	94 42	88 71	4 50	.....	6 90	.....	.....	.....	.....	.....	31 32	225 85
Totals .....	120 00	923 03	735 39	237 18	30 00	36 90	75 00	30 00	30 00	110 00	277 43	469 89	3,074 81

## "PACIFIC."

Working expenses.....	150 00	820 03	602 72	227 12	50 00	26 90	75 00	30 00	110 00	277 43	459 89	2,856 20
Repairs, ordinary.....	.....	.....	22 00	.....	.....	.....	.....	.....	.....	.....	.....	41 00
do extraordinary.....	.....	.....	77 61	.....	.....	.....	.....	.....	.....	.....	.....	77 61
Totals.....	150 00	923 03	725 89	227 12	30 00	36 90	75 00	30 00	110 00	277 43	459 89	3,074 81

Wages.....	1,248 75	25 48	1,230 00	1,230 00	55 00	1085 98	.....	54 66	508 90	1,230 00	36 00	1,250 00	6,704 67
Coal.....	137 50	.....	127 12	.....	119 75	.....	36 00	.....	66 50	268 00	71 75	.....	652 37
Wood.....	52 25	57 00	34 50	.....	.....	48 00	.....	.....	.....	67 25	.....	8 50	385 25
Water.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	64 00
Provisions.....	161 68	198 35	137 60	48 75	133 70	91 50	142 73	.....	73 13	137 02	202 11	146 68	1,414 50
Stores.....	68 71	.....	.....	.....	.....	20 45	.....	.....	.....	.....	.....	54 05	191 96
Equipment.....	44 31	56 70	19 71	26 42	26 42	.....	29 55	133 00	26 97	54 68	118 98	41 50	561 82
Repairs.....	220 73	29 35	124 77	25 00	25 00	5 00	121 74	1784 18	15 00	75 00	.....	471 90	2,872 67
Totals.....	1,933 93	366 88	1,712 45	359 87	359 87	1250 83	330 02	1971 84	690 50	1,831 95	436 34	1,952 63	12,837 24
Working expenses.....	1,713 20	337 53	1,587 63	334 87	334 87	1245 83	208 28	187 66	675 50	1,756 95	436 34	1,480 73	9,984 57
Repairs, ordinary.....	54 22	.....	.....	25 00	25 00	5 00	121 74	1782 43	15 00	45 00	.....	38 05	184 02
do extraordinary.....	166 51	29 35	124 77	.....	.....	.....	.....	.....	.....	30 00	.....	433 85	2,988 65
Totals.....	1,933 93	366 88	1,712 45	359 87	359 87	1250 83	330 02	1971 84	690 50	1,831 95	436 34	1,952 63	12,837 21

## SNAG BOAT "SAMSON."

Wages.....	424 25	.....	.....	.....	.....	50 62	197 59	246 16	464 87	537 42	539 99	918 00	3,328 28
Coal.....	.....	.....	.....	.....	.....	.....	12 00	.....	.....	.....	98 40	50 00	211 02
Wood.....	.....	.....	.....	.....	.....	35 75	19 25	.....	93 50	77 50	56 25	22 50	304 75
Provisions.....	.....	.....	.....	.....	.....	80 13	102 15	.....	173 68	170 61	51 95	157 51	736 03
Stores.....	8 20	.....	.....	.....	.....	.....	.....	.....	52 20	128 78	.....	148 79	337 97
Equipment.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	36 34	.....	36 80	111 59
Repairs.....	635 00	.....	406 60	.....	.....	7 02	121 20	65 02	.....	.....	38 45	269 39	1,541 38
Totals.....	543 20	.....	522 48	522 48	522 48	57 64	452 19	311 18	784 25	950 65	785 04	1,802 98	6,571 02
Working expenses.....	424 25	.....	.....	.....	.....	50 62	390 99	246 16	784 25	950 65	785 04	1,833 60	5,029 64
Repairs, ordinary.....	.....	.....	.....	.....	.....	17 60	11 95	.....	.....	.....	.....	46 25	164 50
do extraordinary.....	453 32	.....	389 00	.....	.....	7 02	109 25	65 02	.....	.....	.....	233 13	1,376 88
Totals.....	543 20	.....	522 48	522 48	522 48	57 64	452 19	311 18	784 25	950 65	785 04	1,802 98	6,571 02

Classification and Quantities of Material removed by the following Dredges, during the Year ended 30th June, 1888.

"ST. LAWRENCE."

Description of Material Dredged.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	Grand Totals.
Clay	2,825	5,250	2,900	7,000							3,763	4,725	8,487
Sand—ordinary			1,487										2,900
Sand—very fine													8,362
Mud and shells													15,488
Totals	2,825	5,250	4,287	7,000							3,763	4,725	36,137
													Cable yards.
													8,487
													2,900
													8,362
													15,488
													36,137

"CANADA."

Clay	4,850	4,950	5,130	4,365	360						4,320	6,975	31,050
Totals	4,850	4,950	5,130	4,365	360						4,320	6,975	31,050

"NEW DOMINION."

Sawdust	2,710	4,760	1,745	3,535									9,215
Clay	10,930	6,000	3,087										23,632
Sand—ordinary	900		1,068										1,968
Sand—very fine													3,675
Mud													2,800
Totals	14,540	11,760	5,880	3,535									40,790

## "CAPE BRETON."

Mud.	7,940	2,010	9,950
<b>Totals</b>	<b>7,940</b>	<b>2,010</b>	<b>9,950</b>

## "PRINCE EDWARD."

Gravel	1,014		1,014
Clay	568		1,338
Sand—ordinary	770		1,455
<b>Totals</b>	<b>1,338</b>	<b>2,437</b>	<b>3,775</b>

## "GEO. MCKENZIE."

Gravel	427		1,697
Stone	428		428
Sand, ordinary	4,140		14,315
<b>To</b>	<b>4,995</b>	<b>3,415</b>	<b>16,400</b>

## "CHALLENGE."

Hard-pan.	480		480
Gravel	720		720
Clay	8,370		1,200
Sand, ordinary	9,090		37,120
<b>Totals</b>	<b>18,670</b>	<b>8,250</b>	<b>39,520</b>

## "NIPISSING."

Hard-pan	1,220		1,220
Boulders	10,560		14,265
Clay	920		10,765
Sand, ordinary	6,010		2,520
<b>Totals</b>	<b>18,710</b>	<b>13,275</b>	<b>50,848</b>

CLASSIFICATION and Quantities of Material removed by the following Dredges, during the Year ended 30th June, 1888.

"ONTARIO."

Description of Material Dredged.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March.	April.	May.	June.	Grand Totals.
Boulders.			980										980
Gravel.			4,470									2,220	2,220
Clay.		900		300									5,670
Sand, ordinary.	5,760	7,960	8,560	3,780							4,560	1,280	31,770
Mud.												2,910	2,910
Totals.	5,760	8,760	13,920	4,080							4,560	6,390	43,470

"QUEEN."

Boulders.					192								948
Gravel.													670
Clay.	2,172	1,344		512							736	4,352	9,116
Sand, ordinary.	2,368	2,624	98	3,202	1,812								5,088
Totals.	4,540	3,968	3,615	5,140	1,504						736	4,352	23,855

"ST. LOUIS."

Clay.	3,825	6,870	5,695										16,390
Sand, ordinary.												3,000	3,000
Totals.	3,825	6,870	5,695									3,000	19,390

"WINNIPEG."

Clay	16,120	16,420	11,680	11,680	11,460	11,460
Sand and clay.	16,120	16,420	11,680	11,680	11,460	11,460
Totals.	16,120	16,420	11,680	11,680	11,460	11,460

"PRIESTMAN."

Clay	3,179	3,138	3,138	3,000	3,000	9,317
Totals.	3,179	3,138	3,138	3,000	3,000	9,317

"PACIFIC."

Hard-pan and boulders.	2,065	2,510	485	210	2,028	240	2,268
Gravel.	2,065	2,510	315	210	1,380	300	2,045
Clay	2,065	350	70	70	750	425	8,710
Sand, ordinary	2,065	2,860	840	210	3,408	750	700
Totals.	2,065	2,860	1,690	490	3,408	750	1,550
							14,773

**Dredge Statement, showing Material removed at different Localities; Total Annual Expenditure on each Dredge and Average Cost per cubic yard.**

**"CHALLENGE."**

Localities.	Hard Pan.	Boulders.	Gravel.	Clay.	Clay and Stone.	Sand, Ordinary.	Sand, Fine.	Mud.	Totals.
Goderich.....			720			19,990			20,650
Kincardine.....	480			1,200		17,190			18,870
<b>Totals.....</b>	<b>480</b>		<b>720</b>	<b>1,200</b>		<b>37,120</b>			<b>39,520</b>

**Total Annual Expenditure, \$6,192.64. Cost per cubic yard, 15¢.**

**"NIPISSING."**

St. Antoine.....	1,220	12,720		1,000		2,310			14,940
Chateaugay.....		1,645				10,220			3,855
Latineau.....				920		546			11,140
South Nation River.....				5,472					6,018
Papineauville.....				12,376		2,650			14,896
<b>Totals.....</b>	<b>1,220</b>	<b>14,265</b>		<b>19,767</b>		<b>15,586</b>			<b>50,848</b>

**Total Annual Expenditure, \$8,401.67. Cost per cubic yard, 16½¢.**

**"ONTARIO."**

Port Hope.....				930		11,700			12,600
Port Darlington.....				3,090		9,090			13,080
Newcastle.....				1,680		5,160			6,840
Oshawa.....						6,800			6,820
Brighton.....			900					2,910	6,180
<b>Totals.....</b>		<b>900</b>	<b>2,220</b>	<b>5,670</b>		<b>31,770</b>		<b>2,910</b>	<b>43,470</b>

**Total Annual Expenditure, \$6,679.10. Cost per cubic yard, 13½¢.**





## DETAILS of Dredging in the Maritime Provinces

Dredge.	Locality.	County.	NEW BRUNSWICK.		
			Quantity	Cost of each Work.	Total Cost.
			C. yds.	\$ cts.	\$ cts.
"New Dominion"	Bellisle Pt. ....	King's N.B. ....	15,305	2,382 80	.....
	Grand Lake. ....	Queen's do ....	21,910	3,433 55	.....
	Hampton .....	King's do ....	3,675	575 91	6,392 26
"Canada" .....	Yarmouth. ....	Yarmouth, N.S. ....	.....	.....	.....
"Cape Breton" ....	Wallace .....	Cumberland do. ....	.....	.....	.....
"Prince Edward" ..	Tignish .....	Prince, P.E.I. ....	.....	.....	.....
"St. Lawrence" ..	Richibucto .....	Kent, N.B. ....	9,362	2,880 24	2,880 24
	Port Hood. ....	Inverness, N.S. ....	.....	.....	.....
	Middle River .....	Pictou do ....	.....	.....	.....
	Pictou Ry. Wharf .....	do do ....	.....	.....	.....
	do Market Wharf.....	do do ....	.....	.....	.....
"Geo. McKenzie"	Cheticamp .....	Inverness do ....	.....	.....	.....
			50,152	.....	9,252 50

Dredge.	NEW BRUNSWICK.		NOVA SCOTIA.	
	Quantity.	Cost.	Quantity.	Cost.
	C. yds.	\$ cts.	C. yds.	\$ cts.
"New Dominion" ..	40,790	6,392 26	.....	.....
"Canada" .....	.....	.....	31,050	9,348 27
"Cape Breton" .....	.....	.....	9,950	4,055 21
"Prince Edward" ..	.....	.....	.....	.....
"St. Lawrence" ..	9,362	2,880 24	26,775	8,180 17
"George McKenzie" ..	.....	.....	16,400	7,653 95
	50,152	9,252 50	84,175	29,847 00

for the Year ended 30th June, 1888.

NOVA SCOTIA.			PRINCE EDWARD ISLAND.			Quantity of each Dredge.	Total Expenditure.
Quantity.	Cost of each Work.	Total Cost.	Quantity.	Cost of each Work.	Total Cost.		
C. yds.	\$ cts.	\$ cts.	C. yds.	\$ cts.	\$ cts.	C. yds.	\$ cts.
.....	.....	.....	.....	.....	.....	40,790	6,392 76
31,050	9,348 27	9,348 27	.....	.....	.....	31,050	9,348 27
9,950	4,685 21	4,685 21	.....	.....	.....	9,950	4,685 21
.....	.....	.....	3,775	5,899 90	5,899 90	3,775	5,899 90
2,900	855 44	.....	.....	.....	.....	.....	.....
7,000	2,138 60	.....	.....	.....	.....	.....	.....
2,275	695 05	.....	.....	.....	.....	.....	.....
14,700	4,491 08	8,180 17	.....	.....	.....	36,137	11,040 41
16,400	7,653 95	7,653 95	.....	.....	.....	16,400	7,653 95
84,175	.....	29,847 60	3,775	.....	5,899 90	138,102	45,000 00

PRINCE EDWARD ISLAND.		Total Quantity.	Expenditure Dredging.	Superintend-ance.	Total Expenditure.	Cost per Cubic yard.
Quantity.	Cost.					
C. yds.	\$ cts.	C. yds.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
.....	.....	40,790	5,760 95	631 31	6,392 26	0 15·6711
.....	.....	31,050	8,654 90	693 37	9,348 27	0 30·107
.....	.....	9,950	4,316 49	348 81	4,685 21	0 46·8855
2,775	5,899 90	3,775	5,355 11	544 79	5,899 90	1 56·288
.....	.....	36,137	10,346 77	693 64	11,040 41	0 30·5615
.....	.....	16,400	6,847 95	806 00	7,653 95	0 46·6704
3,775	5,899 90	138,102	41,282 08	3,717 92	45,000 00	0 32·584

**Cost at Localities dredged, for the Year ended 30th June, 1888.**

**MARITIME PROVINCES.**

Dredge.	Locality.	Date.	Time.	Quantity.	Cost.	Cost per C. Yard.
		1887.		c. yards.	\$ cts.	\$ cts.
"St. Lawrence"...	Richibucto, N. B....	July 12 to Sept. 7.	1 mo. 26 days	9,362	2,045 71	0 21-85
	Port Hood, N.S....	Sept. 9 to 30.....	22 days.....	2,800	749 85	0 26-78
	Mid River, Pictou..	Oct. 1 to 18. ....	18 days. ....	7,000	628 41	0 08-977
		1888.				
	Ry. Wharf do	May 15 to 19.....	5 days .....	2,275	132 00	0 05-800
	Market Wharf do	May 22 to June 22.	1 month .....	14,700	775 55	0 05-275
		1887.				
"Canada".....	Yarmouth, N. S....	July 1 to Nov. 4; 1888, May 10 to June 30.....	5 mo. 26 days	31,050	4,711 72	0 15-1746
	"					
		1887.				
"New Dominion"	Bellisle Point, N.B.	July 1 to 18; Sept. 11 to Oct. 15.....	52 days.....	15,205	1,434 38	0 09-43
	Grand Lake, N.B..	July 19 to Sept. 10.	53 days.....	21,910	1,543 29	0 07-043
		1888.				
	Hampton, N.B.....	June 19 to 30.....	12 days.....	3,675	466 53	0 12-694
		1887.				
"Cape Breton"...	Wallace, N.S.....	Sept. 26 to Nov. 5.	40 days.....	9,950	2,156 93	0 21-677
"Prince Edward"	Tignish, P.E.I.....	July 9 to Sept. 2...	1 mo. 24 days	3,775	1,240 84	0 32-87
"Geo. McKenzie"	Cheticamp, C.B....	Aug. 1 to Oct. 24..	2 mo. 21 days	16,400	3,841 08	0 23-42

## EXPENDITURE for Dredging in Nova Scotia for the Sixteen Years ended 30th June, 1888.

County.	Locality.	Total for the Fifteen Years ended 30th June, 1887.				For the Year 1887-88.				Total Quantities	Total Cost	Cost for each County
		Quantity.		Cost.		Quantity.	Cost.	Cost for County.				
		O. yds.	\$ cts.	\$ cts.	\$ cts.				O. yds.		\$ cts.	\$ cts.
Antigonish.....	Antigonish.....	22,025	3,649 15	.....	.....	.....	.....	.....	22,025	3,619 15	.....	
	Harbour au Boucher .....	10,568	2,498 48	.....	.....	.....	.....	.....	10,568	2,498 48	.....	
	Tracadie .....	2,580	675 26	.....	.....	.....	.....	.....	2,580	675 26	6,822 89	
Annapolis .....	Annapolis .....	2,825	1,635 68	.....	.....	.....	.....	.....	2,825	1 635 68	1,635 68	
Cape Breton .....	Lingan.....	22,267	9,275 56	.....	.....	.....	.....	.....	22,267	9,275 56	.....	
	Sydney .....	54,600	17,781 54	.....	.....	.....	.....	.....	54,600	17,781 54	.....	
	Little Glace Bay .....	31,237	10,988 82	.....	.....	.....	.....	.....	31,237	10,988 82	.....	
	Port Oaklonia .....	17,413	8,242 21	.....	.....	.....	.....	.....	17,413	8,242 21	.....	
	Benacadie Pond .....	20,860	8,993 80	.....	.....	.....	.....	.....	20,860	8,993 80	.....	
	Christmas Island .....	19,045	3,364 98	.....	.....	.....	.....	.....	19,045	3,364 98	55,647 01	
Colchester.....	Tatamagouche .....	57,725	17,032 93	.....	.....	.....	.....	.....	57,725	17,032 93	17,032 93	
Cumberland .....	Parraboro' .....	42,595	12,804 68	.....	.....	.....	.....	.....	42,595	12,804 68	.....	
	Wallace .....	50,885	9,908 28	.....	.....	.....	.....	.....	60,835	14,573 49	27,378 17	
Digby .....	Digby .....	12,585	5,056 29	.....	.....	.....	.....	.....	12,585	5,056 29	5,056 29	
Guyaboro' .....	Guyaboro' .....	5,400	1,413 53	.....	.....	.....	.....	.....	5,400	1,413 53	.....	
	Larry's River .....	26,230	6,546 70	.....	.....	.....	.....	.....	26,230	6,546 70	.....	
	Port Mulgrave .....	3,532	1,749 78	.....	.....	.....	.....	.....	3,532	1,749 78	.....	
	Sherbrooke .....	1,260	496 49	.....	.....	.....	.....	.....	1,260	496 49	.....	
Halifax .....	Bezzetcook .....	3,920	2,593 71	.....	.....	.....	.....	.....	3,920	2,593 71	.....	
	Halifax Ferry .....	6,177	2,083 38	.....	.....	.....	.....	.....	6,177	2,083 38	.....	
	Herring Cove .....	12,111	8,015 05	.....	.....	.....	.....	.....	12,111	8,015 05	.....	
	Ketch Harbour .....	2,989	985 59	.....	.....	.....	.....	.....	2,989	985 59	.....	
	Richmond Wharf.....	792	182 53	.....	.....	.....	.....	.....	792	182 53	.....	
	Roche's Wharf .....	1,750	620 28	.....	.....	.....	.....	.....	1,750	620 28	.....	
	Halifax Ry. Terminus .....	19,299	6,187 38	.....	.....	.....	.....	.....	19,299	6,187 38	.....	
	Jeddore .....	24,516	4,965 56	.....	.....	.....	.....	.....	24,516	4,965 56	.....	
	North West Arm .....	7,350	2,970 39	.....	.....	.....	.....	.....	7,350	2,970 39	.....	
	Quarant's Wharf.....	1,400	630 04	.....	.....	.....	.....	.....	1,400	630 04	29,106 91	
											29,106 91	

EXPENDITURE for Dredging in Nova Scotia for the Sixteen Years ended 30th June, 1888.—*Concluded.*

County.	Locality.	Total for the Fifteen Years ended 30th June, 1887.			For the Year 1887-88.			Total Quantities	Total Cost.	Cost for each County.
		Quantity.	Cost.	Cost for County.	Quantity.	Cost.	Cost for County.			
		O. yds.	\$	cts.	O. yds.	\$	cts.	O. yds.	\$	cts.
Inverness.....	Whycocomagh.....	19,780	3,491 31					19,780	3,491 31	
	Campbell's Pond.....	4,940	872 83					4,940	872 83	
	Port Hastings.....	190 37						270	190 37	
	Cheticamp.....	97,045	26,988 82		16,400	7,683 95		113 445	34,632 87	
	Mabou.....	69,007	29,576 31					69,007	29,576 31	
	Port Hood.....			61,099 74	2,800	885 44	5,509 89	2,800	885 44	69,809 13
Lunenburg.....	Lunenburg.....	70,510	22,194 57					70,510	22,194 57	
	Wahone Bay.....	21,844	5,938 55					21,844	5,938 55	
	Vogler's Cove.....	11,610	5,075 53	33,228 75				11,610	5,075 53	33,228 75
Pictou.....	Acadia Coal Co. Wharf.....	10,240	3,560 26					10,240	3,560 26	
	Albion Mines.....	9,475	2,185 25					9,475	2,185 25	
	East River.....	104,795	25,067 22					104,795	25,067 22	
	Halifax Coal Co Wharf.....	1,680	369 90					1,680	369 90	
	Pictou Public Wharf.....	7,020	1,634 83					7,020	1,634 83	
	do Market Wharf.....	24,900	5,798 74		14,700	4,491 08		39,600	10,289 83	
	do Railway Wharf.....	29,889	9,284 29		2,75	685 05		32,161	9,869 34	
	do Landing.....	7,345	2,680 01					7,345	2,680 01	
	Vale Colliery Wharf.....	1,395	682 15					1,395	682 15	
	River John.....	85,173	22,243 98					85,173	22,243 98	
	Granton.....	21,435	9,270 92					21,435	9,270 92	
	New Glasgow.....	26,310	5,705 09					26,310	5,705 09	
	Middle River.....			89,648 63	7,000	2,188 60	7,324 75	7,000	2,188 60	95,873 38
Queen's.....	Liverpool.....	12,940	4,762 38	4,762 38				12,940	4,762 38	4,762 38
Richmond.....	D'Escoyne Cape LeRonde.....	11,860	5,992 13					11,860	5,992 13	
	St. Peter's Canal.....	78,891	24,277 56					78,891	24,277 56	
	do.....	7,160	2,407 41					7,160	2,407 41	
	Grand Goulet.....	23,584	5,570 49					23,584	5,570 49	
	River Bourgeois.....	18,920	4,468 87					18,920	4,468 87	
	Marine Slip.....	320	56 53	42,712 99				320	56 53	42,742 99
Shelburne.....	Lockport.....	20,825	8,334 85	8,334 85				20,825	8,334 85	8,334 85

Yarmouth .....	Yarmouth .....	64,383	33,107 20	33,107 20	31,050	9,348 27	9,348 27	85,432	31,465 47	31,465 47
Hants .....	Windsor .....	5,460	1,637 60	1,637 60	.....	.....	.....	5,450	1,637 60	1,637 60
Victoria .....	Aspy Bay .....	3,810	1,569 95	1,569 95	.....	.....	.....	3,810	1,569 95	1,569 95
Totals .....	.....	1,343,681	410,343 26	410,343 26	84,175	29,347 60	29,347 60	1,437,856	440,190 86	440,190 86

## EXPENDITURE for Dredging in New Brunswick, for the Sixteen Years ended 30th June, 1888.

County.	Locality.	Total for Fifteen Years ended 30th June, 1887.				For the Year 1887-88.				Total Quantity.	Total Cost.		Cost for each County.
		Quantity.		Cost.		Quantity.		Cost.			\$ cts.		
		O. yds.	\$ cts.	\$ cts.	\$ cts.	O. yds.	\$ cts.	\$ cts.	\$ cts.		O. yds.	\$ cts.	
Gloucester.....	Bathurst .....	72,607	20,629 52	20,629 52	20,629 52					72,607	20,629 52	20,629 52	
Kent .....	Richibucto .....	47,735	14,299 54			9,362	2,860 24			57,097	17,159 78		
	Cocagne .....	27,180	9,601 45							27,180	9,601 45		
	Buctouche .....	13,005	4,934 34							13,005	4,934 34		
	do Priest's Point. ....	3,510	1,110 70							3,510	1,110 70		
Northumberland .....	do Chapel Point. ....	4,140	1,310 07							4,140	1,310 07		
	do Robertson's Wharf. ....	45	14 23	31,270 23				2,860 24		45	14 23	34,130 47	
	Horse Shoe.....	160,417	44,594 13							160,417	44,594 13		
	Outer Bar.....	13,125	4,032 67							13,125	4,032 67		
Queen's .....	Grand Dune.....	37,975	10,121 67	58,748 47						37,975	10,121 67	58,748 47	
	Grand Lake.....	43,715	7,498 78			219,10	3,433 55			65,625	10,932 33		
	do McMann's Cove.....	20,440	4,522 82							20,440	4,522 82		
	Jemseg .....	61,305	12,117 74							61,305	12,117 74		
St. John .....	Washademoak.....	48,975	6,340 83	30,480 17				3,433 55		48,975	6,340 83	33,913 72	
	I. O. Railway Terminus .....	139,810	37,130 01							139,810	37,130 01		
	Navy Island .....	25,294	9,295 79							25,294	9,295 79		
	Marble Cove .....	29,925	4,374 40							29,925	4,374 40		
Sunbury .....	Murray's Mills .....	23,880	3,441 65							23,880	3,441 65		
	Indian town Wharf. ....	1,615	192 83							1,615	192 83		
	Long Wharf .....	7,137	2,680 24							7,137	2,680 24		
	Adam's Wharf .....	7,513	3,247 29							7,513	3,247 29		
Oromocto .....	Miller & Woodman's .....	9,275	1,090 42							9,275	1,090 42		
	Hayford & Stetson's .....	8,015	912 39							8,015	912 39		
	International Wharf.....	450	52 90	62,448 82						450	52 90	62,448 82	
	Oromocto.....	144,153	27,106 86	27,106 86						144,153	27,106 86	27,106 86	



Westmoreland.....	Pointe du Chêne.....	9,432 00	9,432 00	83,760	9,432 00	9,432 00	9,432 00
York.....	Frederickton.....	7,699 15	7,699 15	39,395	39,395	7,699 15	7,699 15
	St. Mary's Ferry.....	6,827 86	6,827 86	15,670	15,670	6,827 86	6,827 86
	Gibson.....	4,379 52	4,379 52	20,395	20,395	4,379 52	4,379 52
King's.....	Belle Isle Point.....	5,773 96	5,773 96	44,865	44,865	5,773 96	5,773 96
	Hampton.....	2,617,96 06	2,617,96 06	15,316	15,316	2,617,96 06	2,617,96 06

## EXPENDITURE for Dredging in Prince Edward Island, for the Sixteen Years ended 30th June, 1888.

County.	Locality.	Total for Fifteen Years ended 30th June, 1887.				For the Year 1887-88.				Total Quantity.	Total Cost.		Cost for each County.	
		Quantity.		Cost.		Quantity.		Cost.			\$ cts.			
		O. yds.	\$ cts.	O. yds.	\$ cts.	O. yds.	\$ cts.	O. yds.	\$ cts.		\$ cts.	\$ cts.		
King's .....	Grand River .....	46,110	8,933 97	106,140	17,119 43	46,110	8,933 97	106,140	17,119 43	46,110	8,933 97	106,140	17,119 43	33,461 73
	Montague River .....	106,140	17,119 43	106,140	17,119 43	106,140	17,119 43	106,140	17,119 43	106,140	17,119 43	106,140	17,119 43	33,461 73
	Murray Harbour .....	44,480	7,378 33	44,480	7,378 33	44,480	7,378 33	44,480	7,378 33	44,480	7,378 33	44,480	7,378 33	33,461 73
Queen's .....	Charlottetown Wharf .....	41,303	10,264 56	41,303	10,264 56	41,303	10,264 56	41,303	10,264 56	41,303	10,264 56	41,303	10,264 56	10,264 56
	do Ferry .....	4,045	670 61	4,045	670 61	4,045	670 61	4,045	670 61	4,045	670 61	4,045	670 61	670 61
	Orapond .....	89,782	27,493 03	89,782	27,493 03	89,782	27,493 03	89,782	27,493 03	89,782	27,493 03	89,782	27,493 03	27,493 03
	Pownal .....	44,400	9,604 55	44,400	9,604 55	44,400	9,604 55	44,400	9,604 55	44,400	9,604 55	44,400	9,604 55	9,604 55
	Rocky Point .....	91,440	14,661 16	91,440	14,661 16	91,440	14,661 16	91,440	14,661 16	91,440	14,661 16	91,440	14,661 16	14,661 16
	Vernon River .....	17,660	6,326 72	17,660	6,326 72	17,660	6,326 72	17,660	6,326 72	17,660	6,326 72	17,660	6,326 72	6,326 72
	Wood Islands .....	2,780	548 00	2,780	548 00	2,780	548 00	2,780	548 00	2,780	548 00	2,780	548 00	548 00
	Nine Mile Creek .....	31,680	6,286 46	31,680	6,286 46	31,680	6,286 46	31,680	6,286 46	31,680	6,286 46	31,680	6,286 46	6,286 46
	Hickey's Wharf .....	760	160 51	760	160 51	760	160 51	760	160 51	760	160 51	760	160 51	160 51
	Carr's Point .....	12,165	2,441 28	12,165	2,441 28	12,165	2,441 28	12,165	2,441 28	12,165	2,441 28	12,165	2,441 28	2,441 28
	Pinette .....	3,825	756 24	3,825	756 24	3,825	756 24	3,825	756 24	3,825	756 24	3,825	756 24	756 24
	Fort Augustus .....	3,195	631 68	3,195	631 68	3,195	631 68	3,195	631 68	3,195	631 68	3,195	631 68	631 68
Prince .....	South Port Ferry .....	33,015	5,528 75	33,015	5,528 75	33,015	5,528 75	33,015	5,528 75	33,015	5,528 75	33,015	5,528 75	5,528 75
	Summerside .....	15,855	2,495 34	15,855	2,495 34	15,855	2,495 34	15,855	2,495 34	15,855	2,495 34	15,855	2,495 34	2,495 34
	Hurd's Point Pier .....	41,070	7,269 95	41,070	7,269 95	41,070	7,269 95	41,070	7,269 95	41,070	7,269 95	41,070	7,269 95	7,269 95
	Tignish .....	7,612	7,105 55	7,612	7,105 55	7,612	7,105 55	7,612	7,105 55	7,612	7,105 55	7,612	7,105 55	18,008 45
		637,427	135,716 12	637,427	135,716 12	637,427	135,716 12	637,427	135,716 12	637,427	135,716 12	637,427	135,716 12	141,616 02

## EXPENDITURE for Dredging in Quebec, for the Sixteen Years ended 30th June, 1888, from Appropriations, Maritime Provinces.

Magdalen Islands, Co Gaspé .....	House Harbour .....	6,800	2,392 91	6,800	2,392 91	6,800	2,392 91
	Amberst Harbour .....	495	242 05	495	242 05	495	242 05
	River du Loup .....	2,687	825 47	2,687	825 47	2,687	825 47
	Témiscouata .....	8,123	3,997 59	8,123	3,997 59	8,123	3,997 59
	Rimouski .....	18,005	7,458 03	18,005	7,458 03	18,005	7,458 03

\* From amount voted for Quebec Dredging.

STATEMENT of Dredging, showing Quantities removed in each Province, and cost of each Dredging for the Sixteen Years ended 30th June, 1868.

Fiscal Year.	New Brunswick			Nova Scotia.			Quebec.			Prince Edward Island.			Total Quantity.	Total Expenditure	Cost per Cubic Yard.
	Quantity.		Cost.	Quantity.		Cost.	Quantity.		Cost.	Quantity.		Cost.			
	C. Yds.	\$ cts.		C. Yds.	\$ cts.		C. Yds.	\$ cts.		C. Yds.	\$ cts.				
1872-73.....	98,660	13,240 50	23,260	8,422 70	6,800	2,292 92	.....	61,320	21,663 20	.....	.....	.....	.....	0 35-328	
1873-74.....	67,725	14,396 57	18,600	6,645 61	.....	.....	.....	83,125	23,334 10	.....	.....	.....	.....	0 28-071	
1874-75.....	78,213	17,325 05	24,416	18,238 83	.....	.....	.....	121,394	40,456 77	.....	.....	.....	.....	0 33-854	
1875-76.....	79,935	17,040 52	91,974	21,885 90	.....	.....	.....	280,192	49,818 32	.....	.....	.....	.....	0 21-612	
1876-77.....	97,690	23,161 90	127,785	31,848 71	.....	.....	.....	359,935	70,766 91	.....	.....	.....	.....	0 23-594	
1877-78.....	81,070	23,393 92	106,887	29,697 94	.....	.....	.....	276,787	64,943 04	.....	.....	.....	.....	0 22-083	
1878-79.....	131,655	27,400 22	116,307	28,287 59	.....	.....	.....	298,352	64,831 88	.....	.....	.....	.....	0 21-951	
1879-80.....	63,510	16,581 79	127,684	34,765 84	.....	.....	.....	228,379	64,396 69	.....	.....	.....	.....	0 28-197	
1880-81.....	44,315	12,983 85	87,118	23,061 64	.....	.....	.....	180,085	45,439 48	.....	.....	.....	.....	0 25-232	
1881-82.....	79,610	18,626 87	99,568	33,363 71	.....	.....	.....	216,431	61,247 15	.....	.....	.....	.....	0 28-321	
1882-83.....	48,565	13,432 70	145,016	43,996 93	.....	.....	.....	360,716	67,569 09	.....	.....	.....	.....	0 26-896	
1883-84.....	47,068	17,101 38	157,160	49,050 58	.....	.....	.....	284,368	79,509 01	.....	.....	.....	.....	0 27-959	
1884-85.....	12,997	24,480 35	76,161	25,250 73	.....	.....	.....	268,269	62,376 68	.....	.....	.....	.....	0 23-243	
1885-86.....	68,505	14,874 63	56,790	21,432 05	.....	.....	.....	142,433	46,708 34	.....	.....	.....	.....	0 31-793	
1886-87.....	69,410	11,452 86	53,409	25,621 19	.....	.....	.....	128,977	43,268 79	.....	.....	.....	.....	0 33-56	
1887-88.....	50,152	9,252 50	54,175	19,847 63	.....	.....	.....	138,102	45,000 00	.....	.....	.....	.....	0 32-58	
	1,165,470	274,048 61	1,385,272	428,255 58	18,006	7,458 03	.....	3,209,954	851,378 24	.....	.....	.....	.....	0 26-52	

STATEMENT of Dredging, showing Quantities removed by Hand in each Province, and cost of each Dredging for the Sixteen Years ended 30th June, 1868.

1872-73.....	1,167,719	245	555 13	12,370	245	555 13	2 25-08
1873-74.....	1,187,950	12,370	3,668 90	12,370	12,370	3,668 90	0 23-84
1874-75.....	1,180-81	11,140	2,560 25	11,140	11,140	2,560 25	0 29-96
1875-76.....	1,181-82	10,610	2,650 00	10,610	10,610	2,650 00	0 24-90
1876-77.....	1,182-83	8,190	2,500 00	8,190	8,190	2,500 00	0 30-52
1877-78.....	1,183-84	8,460	2,500 00	8,460	8,460	2,500 00	0 45-78
1878-79.....	1,184 to 1888	48,015	14,432 28	48,015	48,015	14,432 28	0 30-03

STATEMENT of Dredging in the Maritime Provinces, showing Quantities removed by, and Expenditure of, each Dredge, for the Sixteen Years ended 30th June, 1888.

Dredge.	Total Quantities and Cost for the Fifteen Years ended 30th June, 1887.				1887-88.				Total for Sixteen Years ended 30th June, 1888.			
	Quantity.	Cost.	Per Cubic Yard.		Quantity.	Cost.	Per Cubic Yard.		Quantity.	Cost.	Per Cubic Yard.	
	O. Yards.	\$ cts.	\$ cts.		O. Yards.	\$ cts.	\$ cts.		O. Yards.	\$ cts.	\$ cts.	
"New Dominion "	617,493	118,071 63	0-19-12		40,790	6,382 26	0-15-871		658,283	124,453 89	0-18-90	
"Canada "	410 654	142,679 00	0-34 74		31,050	9,348 27	0-30-107		441,704	152,047 27	0-34-40	
"Cape Breton "	524,988	133,646 11	0-25-45		9,950	4,665 21	0-46-885		534,938	138,311 35	0-25-85	
"Prince Edward "	648,262	137,467 05	0-21-20		3,775	5,899 90	1-56-288		652,037	143,366 95	0-21-98	
"St. Lawrence "	541,911	169,100 00	0-31-20		36,137	11,040 41	0-30-651		578,048	180,140 41	0-31-16	
"Geo. McKenzie "	314,961	98,916 83	0-31-40		16,400	7,653 95	0-46-670		331,361	106,570 78	0-32-16	
	3,058,269	799,880 65	0-26-15		138,102	45,000 00	0-31-58		3,196,371	844,880 65	0-26-43	

STATEMENT of Dredging performed by Hand in the Maritime Provinces, showing Quantities removed and Expenditure at each locality, for Sixteen Years ended 30th June, 1888.

Locality.	1872-73 to 1886-87—Fifteen Years.				1887-88.				Total for Sixteen Years ended 30th June, 1888.			
	Quantity.	Cost.	Per Cubic Yard.		Quantity.	Cost.	Per Cubic Yard.		Quantity.	Cost.	Per Cubic Yard.	
	O. Yards.	\$ cts.	\$ cts.		O. Yards.	\$ cts.	\$ cts.		U. Yards.	\$ cts.	\$ cts.	
Parrboro', N.S.	42,596	12,804 68	0-30-06		.....	.....	.....		42,595	12,804 68	0-30-06	
Windsor, N.S.	5,450	1,637 60	0-29-86		.....	.....	.....		5,450	1,637 60	0-29-86	
	48,046	14,432 28	0-30-03		.....	.....	.....		48,045	14,432 28	0-30-03	

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APPENDIX No. 6.

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REPORT ON DEEPENING THE CHANNEL

BETWEEN

MONTREAL AND QUEBEC,

BY

THE MONTREAL HARBOUR COMMISSIONERS.

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## APPENDIX No. 6.

### REPORT OF THE MONTREAL HARBOUR COMMISSIONERS ON THE DEEP- ENING OF THE CHANNEL BETWEEN MONTREAL AND QUEBEC.

Ref. No. 90,914.

HARBOUR COMMISSIONERS OF MONTREAL,  
SECRETARY'S OFFICE,  
MONTREAL, 8th September, 1888.

SIR,—In compliance with the request contained in your letter of the 4th July, I have the honour to transmit herewith for the information of the Honourable the Minister of Public Works, a copy of the report made to the Harbour Commissioners of Montreal by their Chief Engineer upon the works of deepening the ship channel of the St. Lawrence between Montreal and Quebec, during the Government fiscal year ended 30th June, 1888.

I have the honour to be, Sir,  
Your obedient servant,

ALEXANDER ROBERTSON,  
*Secretary.*

A. GOBEL, Esq.,  
Secretary Department of Public Works,  
Ottawa.

HARBOUR COMMISSIONERS OF MONTREAL,  
CHIEF ENGINEER'S OFFICE,  
MONTREAL, Sept. 7th, 1888.

SIR,—In compliance with the request of the Secretary of Public Works, I beg to submit the following report upon the work of deepening the ship channel of the St. Lawrence, between Montreal and Quebec, during the Government fiscal year, ended 30th June, 1888.

The work in hand is the deepening of the ship channel to 27½ feet at low water instead of 25 feet, the present depth. The breadth of the deepened channel is being made the same as at present, that is 300 feet in the straight parts, with enlargements to about 450 feet at bends and other places where more room is needed.

At the opening of the fiscal year work was being carried on at various parts between Cap Charles and Montreal, with the Harbour Commissioner's fleet of dredges and tenders, and operations were continued throughout the year with the exception of the suspension during the winter.

The chief details of the work accomplished during the fiscal year, and the cost of that part done up to the close of navigation, 1887, are as follows:—

#### CAP CHARLES.

The channel is mainly a cutting through shale rock, and this was practically finished to 26 feet depth at low water in the year ended 30th June, 1887. In May and June, 1888, a dredge, assisted occasionally by stone-lifters, was engaged in cutting through the upper margin of the shoal which consists of hard pan and boulders.

Quantity dredged during the fiscal year, 19,320 cubic yards; boulders removed, 187 cubic yards, at an average cost for both of 4½ cents per cubic yard.

**POUILLIER RAYE.**

A little dredging was done at the upper margin of the shoal in July, 1887.

Quantity removed by dredge and stone-lifter during the fiscal year, 4,265 cubic yards, costing 70 cents per cubic yard.

**CAP À LA ROCHE.**

The cutting of the channel through the shoal, which consists almost entirely of shale rock, was continued during the time of navigation by two dredges. The margins of the shoal, at the ends of the channel, are overlaid with boulders, and one to three stone-lifters were engaged a great part of the time of open navigation in removing them. Quantity of shale dredged 166,380 cubic yards, costing 30½ cents per cubic yard; boulders removed by stone-lifters, 2,775 cubic yards, costing \$1.45 per yard.

**CAP LEVRAUT.**

The deepening of the channel to 27½ feet at low water was very nearly finished at the close of the fiscal year. A dredge worked a short time last fall and a stone-lifter this spring, and removed in all 1,815 cubic yards, costing \$1.28 per cubic yard.

**BATISCAN TRAVERSE.**

A dredge and two stone lifters were employed in the fall of 1887, and a dredge alone in May 1888, and finished the channel through to 27½ feet at low water.

Quantities removed during the fiscal year, clay and stones dredged, 83,107 cubic yards, costing 16½ cents per yard; boulders lifted by stone-lifters, 1,554 cubic yards, costing \$1.49 per yard.

**BATISCAN VILLAGE.**

Some small shallow places were removed by a dredge and stone-lifters, working in the fall of 1887, and in June, 1888.

Quantity dredged, 12,030 cubic yards; boulders removed by stone-lifters, 513 cubic yards.

**CHAMPLAIN.**

The dredging was in progress at the opening of the fiscal year and continued with some interruption till 10th October, when the channel was finished to 27½ feet at low water.

Quantity dredged during the fiscal year 33,241 cubic yards, costing 34½ cents per cubic yard.

**BÉCANCOUR.**

During last fall and the early part of this summer some detached shoals, chiefly of boulders, were cut away and the Upper Traverse completed to 27½ feet at low water.

Quantity dredged 11,974 cubic yards, costing \$1.15 per cubic yard.

**PORT ST. FRANCIS.**

The Force shoal was cut through to 27½ feet depth in July and August, 1887.

Quantity dredged 26,656 cubic yards, costing 22 cents per yard.

**LAKE ST. PETER.**

One to two dredges were employed all the time of navigation in the fiscal year, and at its close only about half a mile of the channel through the lake remained to be dredged.

Quantity removed during the year 746,310 cubic yards, costing 4½ cents per cubic yard.



**CONTRECOEUR.**

A dredge was employed from the opening of navigation 1888 to the close of the fiscal year in the vicinity of Ile St. Ours, and by that time had nearly completed the 27½ feet depth throughout the Contrecoeur channel.

Quantity dredged during the fiscal year 32,083 cubic yards, costing 6½ cents per cubic yard.

**CAP ST. MICHEL.**

A dredge was employed a short time last fall and in the spring of 1888. Quantity dredged 120,740 cubic yards, costing 11½ cents per yard.

**VARENNES.**

One to two dredges worked part of October and November last, chiefly at the curve opposite the village.

Quantity dredged 127,415 cubic yards, costing 6½ cents per yard.

**POINTE AUX TREMBLES.**

One to two dredges were worked for about two months last fall in different places.

Quantity dredged 83,670 cubic yards, costing 20½ cents per yard.

**LONGUEUIL.**

The shoal through which the ship channel runs consists in part of masses of gravel and boulders and of hard pan and boulders.

Two spoon dredges, one elevator dredge and a stone-lifter were employed upon it at different times from 1st July, 1887, to the close of navigation, and during that time 30,079 cubic yards were removed, costing 77 cents per yard.

**MONTREAL.**

Dredging was done at intervals in part of the main channel through the harbour. Quantity dredged 5,040 cubic yards, costing 42 cents per yard.

The aggregate quantity of dredging done at all parts in the ship channel during the Government fiscal year ended 30th June, 1888, was 1,509,700 cubic yards, as against 1,341,486 cubic yards in the preceding fiscal year.

The floating plant employed in the work during the year last past consisted of six elevator dredges, three spoon dredges part of the time, three stone-lifters, eight to nine screw-tugs, five barges used as coal tenders and smith's shops, eighteen hopper bottomed scows and five flat-decked scows. Of the six elevator dredges two are for working in earth and have buckets of 16 and 27 cubic feet capacity, one is for rock or earth, and has buckets of 16 cubic feet capacity; one is for rock and has buckets of 4 cubic feet capacity, and the remaining two are for rock with buckets of 6½ cubic feet capacity.

Yours respectfully,

**JOHN KENNEDY,**  
*Chief Engineer.*

**ALEXANDER ROBERTSON, Esq.,**  
Secretary, &c.



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**APPENDIX No. 7.**



**QUEBEC HARBOUR IMPROVEMENTS.**



**REPORTS ON THE PRINCESS LOUISE EMBANKMENT AND DOCK  
WORKS, RIVER ST. CHARLES; AND ON THE  
GRAVING DOCK, LÉVIS.**

**BY**

**THE QUEBEC HARBOUR COMMISSIONERS.**

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## APPENDIX No. 7.

### QUEBEC HARBOUR IMPROVEMENTS—RIVER ST. CHARLES; AND GRAVING DOCK AT LEVIS.

Ref. No. 91, £24.

HARBOUR COMMISSIONERS' OFFICE,  
QUEBEC, 10th October, 1888.

SIR,—In compliance with request conveyed in your letter of 4th July last, I have the honour to transmit you herewith the Chief Engineer's report on the Quebec Harbour Works, for the fiscal year ended the 30th June last.

I have the honour to be, Sir,  
Your obedient servant,

A. H. VERRÉT,  
*Secretary-Treasurer.*

A. GORRIL, Esq.,  
Secretary, Public Works Department,  
Ottawa.

OTTAWA, 6th October, 1888.

SIR,—I have the honour to submit the following with reference to the works of the Commission under my charge at Quebec, during the fiscal year ended 30th June, 1888.

#### LOUISIE BASIN.

Steady progress was made on the Cross Wall between the Embankment and the northern end of Dalhousie street, and the foundation for the entrance works was successfully laid.

During the winter the gates were built, and are ready for hanging when required. The sluice valves were completed by Mr. Drolet, and have been put in place. A large amount of dredging to 15 feet at low water was done in the Wet Basin, and a cleaning up of the bottom of the Tidal Basin was effected.

A commencement was made in the construction of the South Wall (so-called), and the portion between Dalhousie street and the harbour carrying the outlet of the sewer was completed, together with a part of the wall lying in Dalhousie street. As the foundations of this work can only be carried on at or near low water, much difficulty and loss of time have been incurred.

#### GRAVING DOCK, LÉVIS.

I have to report that this dock is in good order and condition, and has given satisfaction in the case of vessels occupying it for repairs.

I have the honour to be, Sir,  
Your obedient servant,

HENRY F. PERLEY,  
*Chief Engineer.*

A. H. VERRÉT, Esq.,  
Secretary-Treasurer Harbour Commission,  
Quebec.



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APPENDIX No. 8.

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REPORT

ON THE

Saguenay District Slide and Booms,

FOR THE FISCAL YEAR ENDED 30TH JUNE, 1888.

BY

HENRY F. PERLEY, Chief Engineer,

AND

JOSEPH ROSA, Superintendent.

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**APPENDIX No. 8.**

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**SLIDE, BOOMS &c.—SAGUENAY DISTRICT.**

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**Ref. No. 92,837.****CHIEF ENGINEER'S OFFICE,  
OTTAWA, 12th November, 1888.**

**SIR,—I transmit herewith a report by Mr. Joseph Rosa, Assistant Engineer, on the Saguenay Slide, for the fiscal year ended 30th June, 1888.**

**I have the honour to be, Sir,**

**Your obedient servant,**

**HENRY F. PERLEY,**  
*Chief Engineer.*

**A. GORRIL, Esq.,  
Secretary, Public Works Department,  
Ottawa.**

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**QUEBEC, 5th November, 1888.**

**SIR,—During the past fiscal year the work of reconstructing the slide was finished.**

**A wharf was built to protect the boom piers at the head of the boom, and the usual necessary repairs were made to the booms, dams and anchor piers.**

**The number of logs passed through the slide during the year was 48,510.**

**I have the honour to be, Sir,**

**Your obedient servant,**

**JOSEPH ROSA,**  
*Superintendent.*

**HENRY F. PERLEY, Esq.,  
Chief Engineer, Public Works Department,  
Ottawa.**



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APPENDIX No. 9.

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**REPORT**

ON THE

**ST. MAURICE DISTRICT SLIDES AND BOOMS,**

**FOR THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1888.**

BY

**HENRY F. PERLEY, Chief Engineer,**

AND

**CHAS. LAJOIE, Superintendent.**

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## APPENDIX No. 9.

## SLIDES AND BOOMS—ST. MAURICE DISTRICT.

Ref. No. 91,534.

CHIEF ENGINEER'S OFFICE,  
OTTAWA, 2nd October, 1888.

SIR,—Herewith I transmit a report by Mr. C. Lajoie, Superintendent of the St. Maurice District Slides and Booms, on the works under his charge for the fiscal year ended 30th June, 1888.

I have the honour to be, Sir,  
Your obedient servant,  
HENRY F. PERLEY,  
*Chief Engineer.*

A. GOSSEL, Esq.,  
Secretary, Public Works Department,  
Ottawa.

OFFICE OF THE ST. MAURICE RIVER WORKS,  
THREE RIVERS, 24th July, 1888.

SIR,—I have the honour to submit for the information of the Honourable the Minister of Public Works, the following report on the works under my charge during the fiscal year which expired on the 30th of last June.

The quantity of logs cut this year will not reach 200,000. The drive is not yet completed but continues in a satisfactory manner. Spring has been very backward and for that reason the whole number of logs is not yet in the booms.

The breaking up of the ice although the water was very high for a long period has not caused much damage, owing to the increased staff employed to ensure the safety of the works, on account of which the amount allowed for maintenance has been over-expended.

The amount authorized for repairs was.....	\$11,925 57
Of which we expended.....	9,945 78

Leaving an unexpended balance of.....	\$ 1,979 79
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The amount authorized for maintenance was.....	\$15,000 00
And the amount expended was.....	17,675 71

Making an excess of expenditure of.....	\$ 2,675 71
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The expenditure authorized and actually incurred may be stated as follows:—

Expenditure for maintenance.....	\$17,675 71	
do repairs.....	9,945 78	
		\$27,621 49

Amount voted for maintenance.....	\$15,000 00	
do repairs .....	11,925 57	
		26,925 57

Over expenditure beyond the two amounts authorized notwithstanding the best exertions.....	\$ 695 92
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The alterations made last year to the booms of Cap à Corneille will be very advantageous. All parties interested are highly satisfied and consider that these booms are the safest of all the booms on the St. Maurice; although seventy-five thousand logs were received within the booms in the course of twenty-four hours their enormous pressure did not appear to affect their stability, in the least. The safety of these booms, however, can be still further increased by the removal of eight old piers, and by using the stone and iron therein for the construction of four new piers at more eligible points.

I have the honour to be, Sir,

Your obedient servant,

CHAS. LAJOIE,

*Superintendent.*

H. F. PERLEY, Esq.,

Chief Engineer, Department Public Works,  
Ottawa.

### BRIEF DESCRIPTION OF REPAIRS MADE.

#### ENTRANCE OF THE ST. MAURICE.

1. Raising a small pier 3 feet higher and sheathing same with 3 inch deals.
2. Raising pier No. 11 one foot in height, and sheathing the same with 3 inch deals.
3. Raising of pier No. 12 one foot higher, 60 by 10 feet, and sheathing same with 3 inch deals.
4. Pier No. 15 raised 3 feet higher and sheathed on four sides; 16 fenders placed.
5. Ile Caron. A pier of 40 by 12 feet demolished and replaced by two other piers of 16 by 25 by 15 in height, sheathed on 3 sides.
6. Head of Ile Caron. Removal of a shoal and filling up a portion which was undermined with 333 yards of stone and brush.
7. Placing 30 fenders and 13 mooring posts on different piers.
8. Six mooring posts placed on bank for the safety of Cap à Corneille booms.
9. Two large pieces of iron for securing the inch and a quarter chains.
10. Demolition of three large piers above low water.
11. One thousand feet of old booms planked with 3 inch deals.

#### SHAWENEGAN.

1. Building of pier 35 feet long, 28 feet high, and 18 feet wide to strengthen the slide pier.
2. Rebuilding 2 mooring piers on the island, 12 by 12 feet square and 6 feet high.
3. Rebuilding 2 piers on the line of the slide booms, 12 by 12 feet square, and 8 feet high.
4. Making 138 feet of side-railing on the pier at end of slide.
5. One boat, 24 by 7½ feet.
6. Construction of a dyke 186 feet long and 9 feet high.
7. Construction of a dyke 50 feet long and 9 feet high.
8. Construction of a dyke 60 feet long and 9 feet high.
9. Building a pier of 25 by 25 feet square, and 18 feet high at head of falls.
10. Placing 100 feet square timber on dam at head of falls.
11. Placing 50 feet of 8 inch timber lining inside of slide.

#### SHAWENEGAN BAY.

1. Converting 1,029 feet of three ply pine booms into single stick booms on the shoal.

2. Slight repairs to piers Nos. 1, 2, 3, 4, 6, 8, 9, 10, 12 and 13.
3. Renewing the face timbers of the wharf opposite the slide-keeper's residence for a length of 150 feet, a height of 16 feet, and a width of 10 feet at bottom. Protecting the base of the wharf with a layer of stone 3 by 2½ feet.
4. Depositing 5 toises of stone ballast in different portions of wharf constructed last year.
5. Rebuilding and widening sidewalks for an extent of 170 feet.
6. Planking 1,450 feet of 5 feet ply booms with 3 inch spruce deals.
7. Construction of a small house 14 by 10 feet for the keeper of the gate at the lower end of retaining boom.

#### GRAND MÈRE.

1. Covering 200 feet of 3 feet ply booms with 3 inch deals.

#### GRANDES PILES.

1. Repairs to piers Nos. 4, 5, 6, 7 and 9.
2. Removal of the station house to the high ground in rear
3. Repairs to house.
4. Construction of a shed 36 by 20 feet.





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APPENDIX No. 10.

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REPORT

ON THE

Ottawa District Slides and Booms,

FOR THE FISCAL YEAR ENDED 30TH JUNE, 1888.

BY

HENRY F. PERLEY, Chief Engineer,

AND

GEO. P. BROPHY, Superintending Engineer.

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## APPENDIX No. 10.

### SLIDES AND BOOMS—OTTAWA DISTRICT.

Ref. No. 91,536.

CHIEF ENGINEER'S OFFICE,  
OTTAWA, 2nd October, 1888.

SIR,—I transmit herewith the annual report by Mr. G. P. Brophy, Superintending Engineer on the works under his charge on the Ottawa River and its tributaries, for the fiscal year ended 30th June, 1888.

I have the honour to be, Sir,  
Your obedient servant,  
HENRY F. PERLEY,  
Chief Engineer.

A. GOBEIL, Esq.,  
Secretary Public Works Department.

OTTAWA, 27th July, 1888.

SIR,—I have the honour to submit the following report on the works under my charge on the Ottawa River and its tributaries, for the fiscal year ended 30th June, 1888.

Shortly after the spring floods of 1887, the waters of the Ottawa and tributary streams attained a low summer level after which a protracted period of drought set in, which had the effect of completely drying up many of the creeks and decreasing the volume of water in the Ottawa and its affluents to an extent never before witnessed by the oldest inhabitants, and altogether unparalleled in the history of rafting operations in this district. Such being the case, the late "drives" of logs and timber were abandoned for the season. Great difficulty was experienced on many of the streams in protecting the works from the ravages of bush fires which spread to an alarming extent, and on the Madawaska the exposed portions of certain dams were damaged. At the close of the season of navigation the foundations of the works, which in most places were dry and exposed, and therefore easy of access, were thoroughly examined and defects made good.

The work under the heading of repairs, reconstruction and construction, was carried out during the recess as follows:—

#### ON THE MAIN OTTAWA RIVER.

##### *Carillon Station.*

The slide aprons at the head and foot were overhauled, and special provision made for adapting them to the varying pitches of water and holding them in position, by placing jam-nuts on the hoisting screws.

##### *Hull or North Chaudière Slide.*

The bottom timbers and side piers were repaired and the boom timbers straightened; the bridge planking and railing renewed and repaired, and the approaches kept up.

### *The Roadway.*

The roadway between Hull Bridge and the Union Suspension Bridge was cleaned, graded up and levelled, and received coatings of gravel and stone, while the guard walls, railings and sidewalks were repaired.

### *The Union Suspension Bridge.*

Had its approaches made up and macadamized; the cables and attachments cleaned and painted, and the toll house and outbuildings repaired.

### *Ottawa or South Chaudière Station.*

The slides, piers and booms at this place had new timbers and plank inserted where the old ones had become worn and decayed; the bulkheads and platforms replanked; the general storehouse extended and sub-divided; the fences made more secure, and the slide master's house re-roofed and repaired. The iron bridges across the slide and hydraulic channels had their braces and tension rods adjusted, and the roadway planking for the most part renewed in hardwood.

### *The Dufferin, Sappers and Maria Street Bridges.*

The bridges over the Rideau Canal in this city, had their roadway planking repaired, and portions of the iron and stonework where defective, made good.

### *Chats Station.*

At this place the side piers of the canal entrance above the slide, were undermined and dug into at the curve, by the friction of the passing logs and timber. It was necessary to face up these piers and to renew and strengthen portions of them, as also to renew and repair sections of the bottom planking and foundation timbers, as well as to reconstruct a bulkhead that had been wrecked by the hull of a boat passing through the slide.

### *Portage du Fort Station.*

At this place the guide boom and its supports at the slide entrance were repaired and strengthened and the bottom planking patched.

### *Rocher Capitaine Station.*

The side piers of the slide were repaired and the foundation timbers blocked up and levelled. The channel above the slide entrance was cleared of projecting rocks which interfered with the passage of timber.

## TRIBUTARIES OF THE OTTAWA.

### *Gatineau River.*

The canals and channels through which the logs, &c., pass to the safety pond and rafting stations were cleared of debris and the floating stages at the sorting gaps enlarged and improved, and on account of the shifting quicksands encroaching on the boomage space, anchors had to be provided for mooring portions of the boom in a new position. The shoving of the ice having damaged some of the main support piers in their timbers and stone filling, these had to be repaired; and at places where the current had scoured the sand and partially undermined the foundations of piers buttress timbers and filling had to be used as supports.

### *Madawaska River.*

The spring floods of 1887, caused quite a number of breaks in the series of river improvements, consisting of dams, piers, booms and slides on the upper reaches of the stream, between Chain Rapids and Springtown, and these were repaired and the damage made good at the low water season. At Springtown booms, Flat Rapid dams, the

Arnprior slide and the retaining boom and support piers at the mouth of the river, extensive repairs had to be done as these works had been damaged by the high water and moving ice, and at some of the upper stations by the spread of fire.

#### *Coulange River.*

The ordinary repairs incidental to the season's business were carried out during the autumn and winter months at the lower stations, and at Ragged Chute, further up stream, a dam which had its longitudinal and finger timbers, and sheet covering very much wrecked and torn up, was put in working order for the season of 1888.

#### *Black River.*

The slide and guard pier at High Falls on this stream were strengthened and repaired and the boom fastenings and chains overhauled. The pitch of this slide being so steep it is with the greatest difficulty, during the spring freshets, that logs can be governed and fed at the head gates, so that the sides and bottom may not be battered as the pieces descend. The main dam here was also reconstructed.

#### *Petawawa River.*

The line of dams and piers between Trout and Cedar Lakes on the upper reach of the stream were very much damaged by the spring floods and moving ice, more especially in 1887, and as these works have been in existence upwards of 20 years, and are spread over a distance of about 25 miles of the river and follow each other in close succession, their maintenance involved a considerable outlay. The long slides at and above Lake Traverse were also patched and at Crooked Chute lower down stream, the slide and booms had to be strengthened. On the lower reach, the slides and dams at Boisdur and the first, second and third Chutes were stanch and repaired, and the retaining boom and piers at the mouth of the river strengthened.

#### *Dumoine River.*

On this stream, in addition to certain small repairs at the High Falls slide, the dam which had been partially shattered by the high water was repaired by the insertion of new timbers and sheeting where required.

#### RECONSTRUCTION.

The works carried out under this head consisted of the rebuilding of dams and boom piers on the Coulange and Black Rivers that had been wrecked by the ice and spring floods, and the making good of damage at the Mountain and Calumet Stations on the Ottawa River that had been caused by the displacement of portions of the side piers of the slides through ice shoves and the action of the very high water.

#### CONSTRUCTION.

The only new works performed were those in connection with the new booms and anchor support piers that were placed near the head of Calabogie Lake, an expansion of the Madawaska River, with the view of giving facilities to the owners of logs destined for local mills to separate them from the general drives on that stream.

The waters of the Ottawa and tributaries as already stated were abnormally low during the autumn months of 1887, and were comparatively so all last winter, but as there was a heavy aggregate snowfall and a great thickness of ice on the lakes and feeders of the main Ottawa River to the north of the Temiscamingue and Keepawa regions, the "north-water" as it is called, came down in great volume after the local freshets and floods from the more southerly tributaries had run off, and as the spring break up in these remote parts was at a later date than usual, a most favourable opportunity was afforded for rafting and timber driving operations, so much so that up to the end of the period covered by this report the great bulk of the logs, &c., might be considered safely within reach of their destination, and I am glad to be able to say

that the damage sustained by the works under my charge was not much above the average. The following statement furnished on the authority of the collector of slide dues in this city, shows the number of pieces of timber and saw logs that passed these works and the amount of revenue accrued thereon as tolls during the fiscal year:—

	Pieces.
White pine timber.....	20,489
Red do .....	12,927
Boom and dimension timber.....	35,144
Cedars.....	14,493
Round.....	3,372
Tamarac.....	1,271
Spruce.....	651
Oak .....	13
Ash.....	21
Elm.....	5
Basswood.....	6
Sawn traverses.....	18
23,517 railway ties, equal in flat timber to.....	2,940
Sawlogs.....	3,102,798

The revenue accrued was \$61,588.79.

In respectfully submitting the above,

I have the honour to be, Sir,

Your obedient servant,

GEO. P. BROPHY,

*Superintending Engineer, O. R. Works.*

HENRY F. PERLEY, Esq.,  
Chief Engineer of Public Works.

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APPENDIX No. II.

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REPORT

ON THE

**NEWCASTLE DISTRICT SLIDES AND BOOMS,**

BY

**HENRY F. PERLEY, Chief Engineer,**

AND

**R. B. ROGERS, Superintending Engineer.**

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## APPENDIX No. II.

### SLIDES AND BOOMS—NEWCASTLE DISTRICT.

Ref. No. 91,547.

CHIEF ENGINEER'S OFFICE,  
OTTAWA, 2nd October, 1888.

SIR,—I transmit herewith a report by Mr. R. B. Rogers, Superintending Engineer, River Trent and Newcastle District Works, on the works under his charge, for the fiscal year ended 30th June, 1888.

I have the honour to be, Sir,  
Your obedient servant,

HENRY F. PERLEY.  
*Chief Engineer.*

A. GOBBIL, Esq.,  
Secretary Public Works Department,  
Ottawa.

TRENT CANAL WORKS, ENGINEER'S OFFICE,  
PETERBOROUGH, 1st September, 1888.

SIR,—I have the honour to submit the following report on the works under my charge for the fiscal year ended 30th of June, 1888.

The water in this district from 1st July stood at a fair average height. The spring freshet passed without doing damage to any considerable extent. Navigation closed about 25th November and opened again 20th April.

The repairs executed at the different stations were as follows:—

#### FENELON FALLS.

New stop logs were supplied for the slide.

#### SOUGOG RIVER.

A light was kept on the lighthouse at the mouth of the river which has proved of great benefit to navigation. The snags were removed from the navigation channel.

#### BUCKHORN.

A pier was constructed to support the boom leading to the slide. The lower part of the apron was repaired.

#### KATCHEWANNOE LAKE.

The boom separating the navigation channel from the timber channel was broken by the action of the ice. This was repaired. This boom has been of great benefit to the lumbermen as well as to the steamboat owners.

#### PETERBORO'.

The apron, together with the joists of the west sluice, were taken out by the ice. These were temporarily repaired. The eastern pier in the lake, the top of which was taken off by the ice, was repaired.

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**OTONABEE RIVER.**

Good work was done in removing the boulders from the shoals at "Yankee Bonnet" and Robinson's Island and a fair channel has been obtained. No work was done at removing the sawdust from the channels either at the mouth of the river or at Peterboro', for which at both places there was an appropriation, owing to the fact that the lumbermen persist in depositing sawdust in the river. As I have mentioned in former reports, the river is fast filling up with sawdust, and even now at points the channels have been rendered impassable with it. Three piers were constructed at the mouth of the river for the purpose of attaching a boom to. This boom is for keeping a free passage for navigation when timber is passing.

**HASTINGS.**

The floor of the slide and the pier below, which forms one of the retaining walls of the slide were repaired.

**TRENT RIVER.**

Work was done at removing the boulders from the shoals about two miles below Hastings.

I have the honour to be, Sir,  
Your obedient servant,

**RICHARD B. ROGERS,**  
*Superintending Engineer.*

**H. F. PERLEY, Esq.,**  
Chief Engineer, Department Public Works.  
Ottawa.

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**APPENDIX No. 12.**

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**STATEMENT OF STAFF EMPLOYED**

**ON THE**

**SLIDES AND BOOMS**

**THROUGHOUT THE DOMINION.**

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# APPENDIX No. 12.

STATEMENT showing Names, Dates of Appointment, Salaries, &c., of persons employed on the different Slides and Booms.

Name.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
<i>Seguency District.</i>					
Arthur Boulanger.....	Superintendent.....	Saguena'y.....	19th May, 1881	\$ cts. 475 00 per annum.....	
Calixte Fortin.....	Asst Superintendent	do .....	13th do 1881	30 00 p'r month.....	
<i>St. Maurice District.</i>					
Charles Lajble.....	Superintendent.....	Three Rivers .....	7th Oct., 1878	1,200 00 per annum.....	
J. B Normand.....	Asst Superintendent	Month St. Maurice	12th April, 1883	3 00 per day .....	
N. Dagneau.....	Paymaster.....	Three Rivers..	1st Aug., 1883	50 00 per month .....	
Cyrac Lymburner.....	Foreman.....	Month St. Maurice.	25th April, 1881	595 00 per annum .....	
Jos. Pisé .....	Boom Keeper.....	Oap aux Ornelles	10th Dec, 1879	452 50 do .....	
Arthur Ronsean .....	Deputy Slide Master.	Shawenegan .....	12th April, 1888	3 00 per day .....	
Louis St. Onge .....	do .....	do .....	24th July, 1885	365 00 per annum .....	
Charles Langlois .....	Foreman .....	do .....	13th Jan., 1890	444 00 do .....	
Théophile Larue.....	Boom Keeper.....	Grand Mère.....	15th March, 1872	2 00 per day.....	
Frs. Lacroix .....	Asst. Boom Keeper..	do .....	1st April, 1893	489 00 per annum .....	
Arthur Bellerin.....	Boom Keeper.....	Les Gies .....	5th Aug., 1885	365 00 do .....	
<i>Richelieu District.</i>					
Azarie Bienvenue.....	Boom Master .....	Belœil Station ...	1st June, 1892	100 00 per annum ....	
<i>Ottawa District</i>					
G. P. Brophy .....	Superintendent.....	Ottawa.....	6th July, 1873	2,500 00 per annum ....	
D. Scott .....	Accountant.....	do .....	1st Oct., 1884	1,500 00 do .....	
J. H. Scott.....	Measurer & Draughtsman ..	do .....	1st Nov., 1882	2 50 per day.....	

APPENDIX 11.—STATEMENT showing the Names, &c., of persons employed on the different Slides and Booms—*Concluded*.

Name.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
<i>Ottawa District—Con.</i>					
W. Kane .....	Messenger.....	do .....	1st Aug, 1867 .....	\$ 1 25 per day.....	Employed about the works for 20 or 25 years.
Moses Aubrey .....	Foreman Carpenter..	do .....	.....	800 00 per annum.....	Actively employed about 7 months.
Pierre St. Pierre .....	Deputy Slide Master	Carillon .....	21st April, 1868 .....	1 75 per day .....	Actively employed about 7 months. Oversees
D. Noonan .....	Boom Master.....	Gatineau.....	21st March, 1878 .....	500 00 per annum .....	repairs in winter.
W. J. McDonald .....	Deputy Slide Master	Obanidjère.....	26th April, 1876 .....	635 00 do .....	Paid during the season of navigation only, about
J. Soulière .....	Asst. do .....	do .....	1869 .....	2 00 per day.....	7 months. Attends to winter repairs
J. McDonell .....	Deputy Slide Master	Hull.....	1st March, 1877 .....	1 25 do .....	Employed about 6 months.
D. McFarlane .....	Slide Master.....	Obata .....	27th do 1880 .....	490 00 per annum .....	Employed about 6 months during navigation.
John Harvey .....	do .....	Arnprior .....	12th July, 1882 .....	2 50 per day.....	Looks after repairs in winter.
Jos. McGee .....	Boom Master .....	Springtown.....	15th May, 1880 .....	200 00 per annum .....	Employed about 3 months during the season of
Patrick Barry .....	Acting Deputy Slide Master.....	High Falls, Made-waska.....	10th March, 1888 .....	3 0 00 do .....	navigation.
Duncan McLaren .....	Deputy Slide Master	Portage du Fort..	7th Sept, 1891 .....	456 25 do .....	Employed 4 or 5 months during the season of
J. G. Poupore .....	Slide Master .....	Black River. ....	15th Oct, 1880 .....	480 00 do .....	navigation. Looks after repairs in winter.
James S. Rowan .....	do .....	Lower Petawawa..	18th March, 1887 .....	300 00 do .....	Employed about 4 months
Wm. Thompson.....	do .....	Mountain .....	10th Oct, 1879 .....	1 25 per day.....	Employed about 4 months passing timber.
D. Carmichael .....	do .....	Calumet.....	— Aug., 1848 .....	40 00 per month.....	Looks after repairs in winter.
A. Proudfoot .....	do .....	Coulouge.....	1st April, 1865 .....	1 60 per day.....	Actively employed about 6 or 7 months during
Rugh Corley .....	do .....	Upper Petawawa..	1870 .....	2 00 do .....	season of navigation. Looks after repairs

A. McDougall.....	do .....	Joachim.....	6th Nov., 1871	300 00 per annum .....	Employed about 4 months passing timber. Looks after repairs in winter.
Joe. Dufault.....	Boom Master .....	Dumoline .....	24th April, 1882	1 50 per day.....	Employed during timber season.
Hugh Grant.....	Deputy Slide Master.....	do .....	12th do 1872	300 00 per annum.....	Employed during navigation about 3 months. Will inspect works if required.
A. McEwen.....	Slide Master.....	Rocher Capitaine.....	1st May, 1874	480 00 do .....	Employed during navigation, about 3 months. Will inspect works if required.
A. H. Johnson.....	Deputy Slide Master.....	Oheneaux .....	1865	2 50 per day.....	Paid during season of navigation only, about 7 months. Attends to winter repairs.
G. J. Johnson.....	Ast. Deputy Slide Master .....	do .....	1872	1 75 do .....	Paid during season of navigation only, about 7 months. Attends to winter repairs.
Newcastle District.					
B. B. Rogers.....	Superintendent.....	Peterboro' .....	1st July, 1884	600 00 per annum.....	Receives also \$900 per annum from Department of Railways and Canals.
G. H. Giroux .....	Clerk, Supt's Office.....	do .....	do 1882	300 00 do .....	Receives also \$300 per annum from Department of Railways and Canals.
Robert Armstrong.....	Slide Master.....	Ohisholm's Rapids .....	1st April, 1883	200 00 do .....	
John Inram.....	do .....	Penelon Falls.....	do 1883	200 00 do .....	
H. Deacon.....	do .....	Heely's Falls.....	do 1878	200 00 do .....	
W. H. Hall.....	do .....	Buckhorn.....	1st May, 1879	100 00 do .....	Receives also \$150 per annum from Department of Railways and Canals.

*Saguenay Works*.—In addition to the Superintendent, there are employed on the Saguenay works 4 flagmen, at 70 cents per day each during the passing of the logs through the slides, which lasts one or two months.

*St. Maurice Works*.—Every year during the timber running season, the officers in charge of the various stations employ 25 or 30 men during three or four months, at the rate of 80 cents to \$1.10 per working day, inclusive of 40 to 50 cents per day per man, paid for board to the Deputy Slide Masters and Boom-Keepers; also, one clerk and foreman, at \$1 per day, two watchmen and one gate-keeper.

*Ottawa River Works*.—In addition to the above officers, &c., there are employed during the running season, one foreman on slide, at \$1 50, and one assistant foreman, at \$1.25 per day; also, 25 to 30 laborers, at from \$1 to \$1.40 per working day.

R. STECKEL.





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APPENDIX No. 13.

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REPORT

ON

GOVERNMENT TELEGRAPH LINES,

FOR THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1888.

BY

F. N. GISBORNE, Superintendent.

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## APPENDIX No. 13.

### REPORT ON GOVERNMENT TELEGRAPH LINES.

Ref. No. 91,794.

OTTAWA, 30th August, 1888.

SIR,—I have the honour to submit the following report upon the Telegraph Service for the twelve months ended 30th June, 1888, with the usual tabular statements of lines, operating staff, &c., established in the several districts.

I have the honour to be, Sir,

Your obedient servant,

F. N. GISBORNE,

*Superintendent.*

A: GOBEL, Esq.,  
Secretary, Public Works Department.

### TELEGRAPH SERVICE—1887-88.

#### NEWFOUNDLAND.

The line between Cape Ray and Port au Basque was maintained and operated as in previous years, under an agreement made with the Anglo-American Telegraph Company, at the usual cost of \$250.

#### MARITIME PROVINCES.

The several telegraph systems in the Maritime Provinces were operated satisfactorily under the same arrangements as in previous years.

The Meat Cove Line was partly reposed during the autumn of 1887, by the District Superintendent, Mr. R. T. Clinch, St John, N. B., and the S.S. "Newfield" was employed in October in laying two short sections of heavy cable across the channel at St. Annes and Ingonish, for the purpose of facilitating the maintenance of the line in those localities; under a further appropriation made in connection with the line, the remainder of it will be reposed during the present season.

The revenue and expenditure figures of the lines in the Maritime Provinces are as follows:—

	Revenue.		Expenditure.	
	1886-87	1887-88	1886-87	1887-88
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Escuminac Line.....	132 78	109 41	424 18	417 00
Meat Cove Line.....	3,282 27	973 06	1,828 65	2,068 00
Low Point Line.....			50 00	50 00
Cape Sable Line.....	113 86	82 98	291 81	289 00
Bay of Fundy Lines.....	635 73	716 33	1,114 77	1,097 00
Cheticamp Line.....	68 27	200 62	193 06	686 00

## RIVER AND GULF OF ST. LAWRENCE.

The only interruptions that occurred in the telegraph systems operated in the River and Gulf of St. Lawrence districts were in connection with the Magdalen Islands. The cable between Grosse Isle and Bird Rock was interrupted on the 24th April, and the cable between Meat Cove, C. B., and Coffin Island was interrupted on the 14th June. The period of interruption was somewhat protracted in consequence of the SS. "Newfield" not being immediately available for repairs. The vessel was however made ready at the end of July, and communication was re-established between Meat Cove and the Magdalen Islands on the 13th instant (August, 1888), and with Bird Rock one week later.

On the north shore St. Lawrence, the line between Godbout and Moisie River was, early in the winter, cleared throughout of fallen trees, which had gradually accumulated since the line was originally constructed, and rendered the route almost untraversable for repairing purposes. A clear pathway was made, and the work of making repairs to the line, when required, has thereby been greatly expedited. Material was procured for a further extension of the line beyond Birch River, but in consequence of the season being far advanced before arrangements could be completed, it was decided to postpone further action until the present season.

The Grosse Isle quarantine cable was, as in former years, picked up in November, and it was decided that instead of relaying it in the spring, the connection would be made between Orleans Island and Grosse Isle by means of a land line on Ile aux Reaux and two short cables connected therewith. An arrangement was accordingly made with Mr. Narcisse Roberge, the proprietor, for the establishment of a land line and telegraph office on Ile aux Reaux, and communication with Grosse Isle was restored on the 20th June. With a view to effecting a permanent connection with the quarantine station, the shore ends of these short cables have been cemented in channels down to low water mark, and it is expected the necessity for picking up and relaying these cables every season will, under the present conditions, be obviated.

The revenue and expenditure figures of the lines in the River and Gulf St. Lawrence are as follows:—

	Revenue.		Expenditure.	
	1886-87	1887-88	1886-87	1887-88
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Anticosti Lines .....	533 64	471 02	1,680 49	1,739 75
Magdalen Islands Lines .....	394 78	508 04	1,810 72	2,416 74
North Shore, St. Lawrence and Chicoutimi Lines .....	2,230 92	2,354 60	6,800 00	6,120 42
Quarantine Line .....	177 96	213 08	519 08	551 61

## ONTARIO.

The land line and cable connecting Amherst Island by telephone with the telegraph office at Bath continued without interruption during the year. The revenue was \$81.58, and the expenditure \$76.48.

On the 19th September, 1887, a line, 56 miles in length, was completed and put in operation between Colpoys Bay, near Wiarton, and Tobermory, Ont., by the Great North Western Telegraph Company for a bonus of \$5,600, under an agreement stipulating for its maintenance in perpetuity. The revenue of this line accrues to the company.

## NORTH-WEST TERRITORY.

The repoling of the lines between Battleford and Humboldt, begun early in the season of 1886-87, as stated in my last annual report, was done by days' labour and was completed on the 17th October, 1887, and the partial repoling of the Qu'Appelle—Humboldt section, was done under contract by Mr. J. Carson on the 11th October, 1887. Further appropriations having been made for reconstruction purposes during the present summer, the Qu'Appelle—Humboldt section is now being completed, and the line between Clarke's Crossing and Prince Albert is also being repoled throughout; the contracts and arrangements for the work being as follows :—

*Qu'Appelle—Humboldt Section.*

A. C. Vaughan, extension of contract of April, 1887, 2,130 cedar poles at \$1.45.....	\$3,088 50
Thompson & Nelson, distribution of poles.....	\$358 77
R. Johnston do .....	371 76
G. Goldie do .....	139 00
H. McIntosh do .....	328 35
	————\$1,197 88
E. Gundry, erection of poles, contract limited to.....	800 00

The poles have been distributed, and Mr. Gundry is now carrying on the work to completion.

*Prince Albert Line.*

B. Boyer, contract May, 1888, supply and distribution 2,492 tamarac poles at \$1.25; 2 masts at \$30—\$3,175.

Work of erection of the poles is being performed by days labour, under the supervision of the District Superintendent.

Fifty poles have also been procured for the Wood Mountain line to replace as many damaged by lightning. This line is in good condition.

The revenue and expenditure figures of the North West lines are as follows :—

	Revenue.		Expenditure.	
	1886-87.	1887-88	1886-87.	1887-88.
	\$ cts	\$ cts.	\$ cts.	\$ cts.
North-West lines.....	8,841 69	6,688 22	16,693 57	23,264 90

## BRITISH COLUMBIA.

The Ladner's Landing branch line, 18 miles in length, was leased, under date 28th October, 1887, to Messrs. J. A. Laidlaw and Jas. Wilson, the lessees agreeing to maintain the line permanently without cost to the Government.

The line from Ashcroft to Barkerville, 276½ miles, is operated by the Canadian Pacific Railway Telegraph Company for the Government, under an agreement as arranged in the previous year.

## RECAPITULATION.

(Exclusive of lines in the North West Territories.)

	Expenditure.	Revenue.	Remarks.
	\$ cts.	\$ cts.	
<b>Gulf of St. Lawrence and Maritime Provinces :—</b>			
Anticosti Island. ....	1,739 75	471 02	Signal Service and Meteorological Service messages being transmitted free of charge.
Magdalen Islands (including Meat Cove line).....	4,485 38	1,481 10	
Cheticamp—Mabou.....	686 98	200 62	
Cape Sable—Barrington.....	289 06	82 98	
Chatham—Escuminac.....	417 04	109 41	
Grosse Isle Quarantine.....	551 61	213 08	
Bay of Fundy.....	1,097 74	716 33	
North Shore, St. Lawrence.....	6,120 42	2,354 60	
Subsidies, stationery, line and office material, cable repairs and contingencies chargeable to special appropriation for Gulf lines.....	7,148 98		
	22,536 96	5,629 14	
Ontario—Bath—Amherst Island line.....	76 48	81 58	
<b>Total.....</b>	<b>22,613 44</b>	<b>5,710 72</b>	
<b>Total figures for 1886-87 were.....</b>	<b>19,753 01</b>	<b>7,647 13</b>	

NOTE.—The revenue herein reported for each year represents the net traffic receipts for the 12 months, July to June, inclusive. In the Departmental and other statements the figures for telegraph revenue comprise only such amounts as have come to hand during and up to the close of the fiscal year. It will therefore be understood how it is that the several accounts do not exactly agree.

F. N. GISBORNE,  
Superintendent Government Telegraph Service.

# GOVERNMENT TELEGRAPH SERVICE.

## NEWFOUNDLAND TELEGRAPH SYSTEM.

STATIONS.	Intermediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	Miles.		\$ cts.		
1 Port au Basque.....	0	.....	50 00 or com'n.....	.....	N.B.—The commission is 25 per cent. upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$60 per annum.
2 Cape Ray Lighthouse.....	14	.....	50 00 do .....	.....	
Totals .....	14		100 00		

Cost of land line, \$1,762.36; interest thereon at 5 per cent., say ..... \$ 90 00  
 Estimated annual maintenance and repairs..... 160 00

Total..... \$ 250 00 Required in Estimates, 1888-89.

N.B.—The above short line is constructed in connection with the Signal Service, and connects at Port au Basque with the land line system of the Anglo-American Telegraph Company.

**ANTICOSTI TELEGRAPH SYSTEM.  
ANTICOSTI ISLAND SERVICE.**

[1898]

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No.	Stations.	Inter- mediate Distances.	Operators.	Salaries per annum.	Date of Appointment.	Maxo.
1	1° Fox Bay.....	Miles. 0	H. Strange.....	\$ etc. 50 00 or com'n'n....	Nov. 1, 1887	N.B.—The commission is 25 per cent. upon all business to and from the office; and commission guaranteed not to be less than at the rate of \$50 per annum.
2	2° Heath Point Lighthouse.....	23	T. Gagné.....	50 00 do	July 27, 1881	General Repairer. Plus \$1 per day when absent on duty.
3	3° South Point Lighthouse.....	32½	W. Uarter.....	50 00 do	do 27, 1881	
4	4° Shallow Creek.....	17½	B. Bralley.....	50 00 do	do 7, 1881	
5	5° Salt Lake.....	57½	F. Denault.....	360 00 do	Oct. 19, 1881	
6	6° South-West Point Lighthouse	15	Miss G. Pope..... E. Pope.....	200 00 do 100 00 do	Oct. 18, 1889 Aug. 1, 1882	Chief Operator since 1st August, 1882. District Superintendent. Plus \$1 per day when absent on duty.
7	7° Jupiter River.....	7	.....	50 00 do	.....	NOTE.—A special allowance for maintenance of office, \$50 per annum, has been added to the commission for offices marked *, since September, 1887.
8	8° Otter River.....	17½	.....	50 00 do	.....	
9	9° Becarie River.....	22	M. Duguay.....	50 00 do	Oct. 1, 1886	
10	10° Cape Eagle (Villa Bay).....	10	.....	50 00 do	.....	
11	11° West Point Lighthouse.....	14	A. Malouin.....	50 00 do	Aug. 1, 1881	
12	12° English Bay.....	3	F. Osbot.....	50 00 do	July 1, 1882	
	Total.....	214		1160 00		

## GOVERNMENT TELEGRAPH SERVICE—Continued.

## ANTICOSTI TELEGRAPH SYSTEM.

## GASPÉ.

Stations.	Inter- mediate Distances.	Operators.	Salary per annum.	Date of Appointment.	Memo.
1 L'Anse à Fougère.....	Miles.		\$ cts. 50 00 or com'n.		N.B.—The commission is 25 per cent. on all busi- ness to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2 Gaspé Basin.....	28 28	J. J. Annett.....	150 00 200 00	Oct. 16, 1881...	

## ESTIMATED COST OF ANNUAL MAINTENANCE OF ANTICOSTI SYSTEM.

Land lines—Salaries and repairs .....	\$3,000 00
Cables—Repairs, say .....	1,000 00
<b>Total .....</b>	<b>\$4,000 00</b>
<b>Less—Revenue, probably .....</b>	<b>500 00</b>
<b>Balance deficit.....</b>	<b>\$3,500 00</b>

\$4,000 00 Required in Estimates,  
1888-89.



## MAGDALEN ISLANDS TELEGRAPH SYSTEM.

## MAGDALEN ISLANDS SECTION.

Stations.	Inter- mediate Distances.	Operators.	Salaries per annum.	Date of Appointment.	Memo.
1 Amherst.....	Miles. 0	Miss J. Shea.....	\$ cts. 50 00 or com'n.	Oct. 1, 1882	N.B.—The commission is 25 per cent. on all business to and from the office; said commission guaranteed not to be less than at the rate of \$40 per annum.
2 Amherst Lighthouse.....	9	Wm. Cormier.....	50 00 or com'n.	June 11, 1881	Plus \$30 per annum for rent. General line repairer.
3 Etang du Nord Village.....	15	P. Pelletier.....	400 00	Dec. 1, 1881	2-wire loop.
4 do Lighthouse .....	1	T. O'Brien.....	50 00 or com'n.	do 1, 1881	
5 Cap aux Meules.....	.....	W. Lealle.....	50 00 or com'n.	Aug. 9, 1883	
6 House Harbour .....	8	.....	50 00	.....	House Harbour Agency discontinued since July, 1887, arrangements are being made to re-open the office as soon as practicable.
7 Wolfe Island.....	28½	.....	100 00	.....	Wolfe Island Office was closed in May, 1888.
8 Grosse Isle .....	11	A. LeBourdais, D. Supt.....	500 00	Aug. 17, 1880	Plus \$1 per day when absent on duty.
9 Bird Rock .....	Cable .....	T. Turbide.....	50 00 or com'n.	do 29, 1881	
10 Grand Entry .....	11	Miss McPhail.....	50 00	Feb. 18, 1882	
Total.....	83½		1,350 00		

**MAGDALEN ISLANDS TELEGRAPH SYSTEM.**  
**CAPE BRETON SECTION.**

Stations.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	Memo.
1 Meat Cove (Cable Station)...	Miles. 0	A. B. McDonald ....	\$ cts. 420 00	Nov. 7, 1880	N.B.—The commission is 25 p. c. upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2 Arpy Bay.....	16½	B. G. Zwicker .....	50 00 or com'n.	Aug. 1, 1882	General repairer.
3 Neil's Harbour { } way house	15	M. McLeod .....	50 00 do	April 1, 1887	
4 Ingouish, North Bay { } Loop Line...	9	J. M. Burke. ....	300 00 do	do 1, 1882	
5 Ingouish Harbour .....	10½	D. McLennan. ....	50 00 do	do .....	
6 Indian Brook.....	23	Miss C. Morrison .....	50 00 do	April 1, 1883	
7 St. Anne's, South Bay.....	19	Miss C. Morrison .....	50 00 do	do 1, 1884	N.B.—This section is at present operated and maintained by the Western Union Telegraph Company, but at the cost of the Government. The agreement is for ten years (expiring 18th April, 1891), but can be cancelled on one year's notice.
8 Baddeck (Loop Line).....	13	Miss Dunlop.....	50 00 do	Jan. 1, 1882	
9 Englishtown.....	6	Miss Bingham. ....	50 00 do	July 19, 1882	
10 Kelly's Cove (N. Campbell'ton)	2	Miss M. O. Campbell ...	50 00 do	April 1, 1886	
11 Big Bras d'Or.....	6	.....	50 00 do	.....	
12 North Sydney .....	12½	.....	.....	.....	
<b>Totals</b> .....	<b>128½</b>		<b>1,290 00</b>		

**ESTIMATED COST OF ANNUAL MAINTENANCE OF MAGDALEN ISLAND SYSTEM.**

Local lines. Salaries and repairs .....	\$4,100 00
Cable. Repair, say .....	1,000 00
<b>Total</b> .....	<b>\$5,100 00</b>
Less probable revenue. ....	1,400 00
<b>Balance deficit</b> .....	<b>\$3,700 00</b>
	<b>\$5,100 00 Required in Estimates, 1888-89.</b>

# NOVA SCOTIA TELEGRAPH SYSTEM. CAPE SABLE SECTION.

Stations.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	Miles.		\$ cts.		
1 Barrington.. ....	0	W. V. Tel. Coy.'s Agent.	50 00 or com'n...	Dec. 18, 1883	N.B.—The commission is 25 p. c. upon all business to and from the offices; said commission guaranteed to be not less than at the rate of \$50 per annum.
2 Newelltown (including 1½ miles cable).....	11	Miss S. J. Newell.....	50 00 do ...	do 22, 1883	
3 Cape Sable Island Lighthouse (including ¼ mile cable)....	6½	I. K. Doane.....	50 00 do ...	do 18, 1883	
<b>Totals.....</b>	<b>17½</b>		<b>150 00</b>		

## Estimated cost of annual maintenance :—

Required in Estimates for 1888-89 .....	\$300 00
Estimated revenue do .....	150 00

## GOVERNMENT TELEGRAPH SERVICE—Continued.

## LOW POINT, CAPE BRETON SECTION.

No.	STATIONS.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	Remarks.
		Miles.		\$ cts.		
1	Lingan .....	0	.....	50 00 or com'n...	.....	N.B.—The commission is 25 p.c. upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2	Low Point Lighthouse.....	5	S. Peters .....	50 00 do ...	Aug. 1, 1881	
	Totals .....	5		100 00		

## Estimated annual maintenance and repairs:—

Land lines—Salaries and repairs..... \$150 00 Required in Estimates, 1888-89.

## EAST COAST SECTION.

N.B.—In connection with the Signal Service a land line 208 miles in length has been erected between Canso and Halifax for a bonus of \$16,000, and is now maintained and operated by the Western Union Telegraph Company without further cost to the Government.

## MABOU—OHEGIOAMP, O. B., TELEGRAPH SYSTEM.

1	Mabou .....	0	Miss M. Finn .....	50 00 or com'n...	April 1, 1887	N.B.—The commission is 25 p.c. of the Government line tariff receipts, and is guaranteed to amount to not less than \$50 per annum.
2	Broad Cove.....	20	J. J. Campbell.....	do	Sept. 1, 1887	
3	Margate Harbor .....	17	Mrs. M. A. McLellan.....	do	April 1, 1887	
4	Ohegiocamp .....	16	Mrs. M. Finet.....	do	do	
	Total .....	53				

Estimated cost of annual maintenance..... \$550 00 Required in Estimates, 1888-89.  
 Estimated revenue..... 150 00

## CHATHAM-ESEUMINAC, N.B., TELEGRAPH SYSTEM.

Stations.	Intermediate Distances.	Operators.	Salary per Annum.	Date of Appointment.	Memo.
1 Chatham .. .. .	Miles. 0	Great North-Western Telegraph Co.	\$ cts. 185 00	1885. .....	This amount is paid for supervision of the line and office accommodation at Chatham.
2 Black Brook .. .. .	5½	.....	50 00 or com'n	.....	
3 Bay du Vin .. .. .	15	Miss M. Williston . ....	50 00 do	March 1 .....	The commission is 25 per cent. of the Govern- ment line tariff receipts, and is guaranteed to amount to not less than \$50 per annum. Black Brook office has been closed since Feb., 1887, in consequence of the agent having resigned.
4 Esceumiac .. .. .	8½	Mrs. A. Lewis .....	50 00 do	Sept. 1 .....	
5 Point Esceumiac Lighthouse	12	H. W. Phillips, jun. ....	50 00 do	Feb. 1 .....	
Total .. .. .	42		385 00		

Estimated cost of annual maintenance, salaries and repairs. .... \$900 00, Required in Estimates, 1888-89.

Estimated Revenue. .... 150 00

## GOVERNMENT TELEGRAPH SERVICE—Continued.

BAY OF FUNDY, N. B., TELEGRAPH SYSTEM.  
GRAND MANAN SECTION.

No.	Stations.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	<i>Long Eddy Cable Hut, to</i>	<i>Miles.</i>		<i>\$ cts.</i>		
1	Flagg's Cove.....	3	{ Mrs. C. O. Seely (D. Supt.) Miss T. E. Milligan.....	420 00 50 00	Nov. 18, 1880... Aug. 1, 1887...	N. B.—The commission is 25 p.c. upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2	Woodward's Cove .....	6	E. Cameron.....	50 00 or com'n..	April 1, 1885...	
3	Grand Harbour. ....	2	F. A. Newton.....	50 00 do	April 1, 1887...	
4	Seal Cove.....	4½	O. McLaughlin. ....	50 00 do	Jan. 1, 1883..	
5	Southern Head Lighthouse...	5½	Wood McLaughlin..... D. McKay, Repairer.....	50 00 do 60 00	do 18, 1881.. May 1, 1881..	
	<b>Totals</b> .....	<b>21</b>	.....	<b>730 00</b>		

## CAMP BELLO SECTION.

	Liberty One Cable Hut, to	Miles.	G. M. Maboe J. Oushing.	\$ cts.	Dec. 1, 1881... do 25, 1881...
1	Welchpool .....	7½		100 00 or com'n...	
2	Eastport, Maine, U.S.A .....	3		100 00	
	<b>Total</b> .....			<u>200 00</u>	
<b>ESTIMATED COST OF ANNUAL MAINTENANCE AND REVENUE.</b>					
Land lines—Salaries and repairs.....				\$1,000 00	
Cable—Repairs, probably .....				1,000 00	
<b>Total</b> .....				<u>\$2,000 00</u>	<b>Required in Estimates,</b>
Less probable revenue.....				<u>700 00</u>	<b>1888-89.</b>
<b>Balance deficit</b> .....				<u><u>\$1,300 00</u></u>	

**GOVERNMENT TELEGRAPH SERVICE—Continued.**  
**CHICOUTIMI AND NORTH SHORE OF ST. LAWRENCE TELEGRAPH SYSTEM.**  
**CHICOUTIMI SECTION.**

Stations.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	Miles.				
1 Bay St. Paul.....	0	F. Boivin.....	\$ 50 or comm'n* {	Previous to {	*The commission upon business is 25 per cent of the tolls for the Government line; the amount guaranteed to be not less than \$50 per annum
2 St. Urbain.....	9	A. Boivin.....	50 do ...	April 1, '86. {	
3 La Oruche.....	37	.....	50 do ...	do do	
4 St. Alexis.....	31½	A. Gauthier (Repairer)...	420 ...	May 15, 1887...	
5 St. Alphonse de Bagotville...	3	G. Lavale.....	50 or comm'n* {	April do	
6 Chicoutimi.....	11½	A. Simard.....	50 do ...	April 28, 1888.	
Total.....	92	T. Boily.....	720		

**MAINTENANCE.**

Included with North Shore Section.  
**NORTH SHORE SECTION.**

1 Murray Bay.....	0	Mrs. F. Vincent.....	\$ 50 or comm'n* {	Previous to {	
2 Cap L'aigle.....	4	N. Duchesne.....	50 do ...	April 1, '85. {	
3 St. Fidèle.....	6	E. W. Tremblay.....	50 do ...	June 1, 1888... {	
4 St. Siméon.....	11	D. Gaudin.....	50 do ...	Previous to {	
5 Baie des Rochers.....	12	G. Savard.....	50 do ...	April 1, '86. {	
6 Riv aux Canards } Loop Line		G. Boullianne.....	50 do ...	Dec. 1, 1887...	
7 St. Étienne.....	17	M. Molaren (Repairer)...	420 ..... {	June, 1887....	
		J. Savard.....	50 or comm'n* {	Nov., 1888....	
8 Tadoussac (1½ mile cable).....	18	D. Lapointe.....	50 do ...	Nov., 1888....	
9 Bergeronnes.....	15	M. Savard.....	50 do ...	Previous to {	
10 Sacumains.....	12	J. E. Topping.....	50 do ...	April, 1885. {	
11 Mille Vaches.....	16	J. A. Pulse.....	50 do ...	do do	
12 Portneuf Mills.....	11½	B. Pincombe.....	50 do ...	do do	
			50 do ...	May, 1887....	



13	Portneuf Light (Loop 8 miles)	9	L. Tremblay .....	50 or comm'n. ....	Previous to April 1, '85.
14	Sault au Cochon .....	7	E. Courbron (Repairer) .....	430 .....	April 1, 1888...
15	Bétiakmité .....	31	J. Forrest .....	50 or comm'n. ....	Dec. 1, 1887...
16	Pointe aux Outardes (cable) .....	18	P. O. Dupuis .....	50 do .....	Nov. 1, 1887...
17	Pointe Paradis, Manicouagan .....	18	P. O. Bonenfant .....	500 per annum .....	Aug. 1, 1883...
18	River Godbout (cable) .....	26	N. A. Oomeau .....	50 or comm'n. ....	Oct. 15, 1883...
19	Pointe des Monts .....	184	L. F. Fafard .....	50 do .....	Dec. 28, 1883...
20	Trinity Bay .....	74	Z. Poulin .....	50 do .....	May 16, 1884...
21	Egg Island Harbour .....	18	P. S. Bodman (Repairer) .....	420 .....	Oct. 1, 1886...
22	L'entrecot River .....	13	Dist Supt's Office .....	180 .....	Jan. 2, 1884...
23	Sept Isles .....	100	P. E. Vignault .....	50 or comm'n. ....	May 1, 1886...
24	River Moisie .....	18	D. Portier .....	50 or comm'n. ....	
25	Poste de Mingan .....	(est'd) 110			
26	Pointe aux Esquimaux .....	18			
27	Natashquan .....	64			
28	Wapitagam .....	60			
29	Shécatica .....	83			
30	Bonne Espérance .....	49			
31	Anse aux Blancs Sablon .....	24			
32	Porteau Bay .....	13			
33	Point Amour Lighthouse .....	44			

Total length of land line and cable Murray Bay  
to Moisie is 386½ miles.

Projected Line.

830

## GOVERNMENT TELEGRAPH SERVICE—Continued.

## GROSSE ISLE QUARANTINE TELEGRAPH SYSTEM.

No.	Stations.	Intermediate Distances.	Operators.	Salaries per Annum.	When Appointed.	Memo.
1	Quebec.....	Miles. 9	Great North-Western Telegraph Co.	\$ cts. 185 00		This amount is paid for supervision of the line, and covers rent of the pole line Quebec to L'Ange Gardien, for which \$35 per annum is charged.
2	L'Ange Gardien..... St. Pierre (4 mile cable).....	13 4	O. Turcott .....	50 00 or com'n.....	Mar. 1, 1885	
3	St. Pétronille.....	4½	Mrs. Blais .....	50 00 do	Oct. 1, 1887	This commission is 25 per cent. of the Government line tariff, and is guaranteed to amount to not less than \$50 per annum.
4	St. Laurent.....	6½	Mlle. L. Chabot .....	50 00 do	Dec. 20, 1884	
5	St. Jean.....	7	H. Bernard.....	50 00 do	Jan. 1, 1885	
6	St. François (including 5½ miles cable).....	6½	M. Emond.....	50 00 do	Mar. 1, 1885	
7	Grosse Isle quarantine office. do hospital.....	9 1½	M. Langlois..... (Telephone).....	50 00 do	Sept. 1, 1885	
8	Total.....	52		485 00		

## ESTIMATED COST OF ANNUAL MAINTENANCE.

Land line salaries and repairs .....	\$ 850 00
Cable repairs.....	300 00
Required in Estimates, 1888-89 .....	\$1,150 00
Estimated Revenue.....	\$ 200 00

# GOVERNMENT TELEGRAPH SERVICE.—Continued.

## ONTARIO: BATH-AMHERST ISLAND TELEGRAPH SYSTEM.

Stations.	Inter- mediate Distances.	Agents.	Salaries per Annum.	Date of Appointment.	Memo.
1 Bath. ....	0	F. W. Armstrong .....	\$50 00	Nov. 15, 1885	Accountant and General Agent. The commission is upon the receipts for Govern- ment line.
2 Emerald... .. (1½ mile cable	3½	M. Fowler & McGinness. 25 p. c. comm'n....	do	do	
3 Stella ....	4½	J. S. Neilson.....	do	do	
Total.....	8				

This line is operated with telephones.

Estimated cost of actual maintenance..... \$250 00

The revenue will about cover the maintenance expenditure.

## GOVERNMENT TELEGRAPH SERVICE—Continued.

## LINES IN THE NORTH-WEST TERRITORY.

## QU'APPELLE-EDMONTON SECTION.

Stations.	Intermediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	Memo.
	Miles.		\$		
1 Qu'Appelle .....	0	E. W. Warner .....	ota 720 00	Jan., 1883...	
2 Fort Qu'Appelle .....	17	Miss A. Johnston .....	600 00	Mar. 1, 1885...	
3 Touchwood .....	46	A. Von Lindeburg .....	600 00	Nov. 1, 1883...	
4 Humbolt .....	78	J. M. Anderson .....	720 00	May 1, 1884...	
5 Clarke's Crossing .....	55	{ E. J. Melloy, Agent..... J. Harrington, Repairer.....	720 00	do 1, 1884...	
6 Henrietta .....	38	{ W. Salisbury, Repairer..... H. Richardson, Agent.....	600 00	Jan. 1, 1885...	
7 Battleford .....	47	{ H. McClennahan, Operator..... H. Sikes, Repairer.....	720 00	Oct. 1, 1886...	
8 Fort Pitt .....	89	{ W. M. McDonald, Repairer..... N. Potvin, Repairer.....	720 00	Prev. to 1882...	
9 Moose Hill Creek .....	62	{ W. G. Gillis, Repairer..... W. G. Ross, Agent.....	720 00	April 1, 1886...	
10 Victoria .....	78½	{ A. Taylor, Agent..... W. McKay, Repairer.....	720 00	July 1, 1886...	
11 Fort Saskatchewan .....	49		Com. 25 p.c. 720 00	June, 1887...	
12 Edmonton .....	24		720 00	Nov. 6, 1887...	
<i>Branch Line—</i>				Dec., 1886...	
Clarke's Crossing .....	0			Prev. to 1882...	
13 St. Laurent .....	60	L. P. O. Noel .....	720 00	May 1, 1886...	
14 Prince Albert .....	23	E. J. Rankin .....	720 00	Aug. 1, 1887...	
<i>Branch Line—</i>				Mar., 1887...	
Clarke's Crossing .....	0				
15 Saskatoon .....	14				
<i>Branch Line—</i>					
Edmonton .....	0				
16 St. Albert .....	9				
<b>Total</b> .....	<b>687½</b>	See note a.			a. The Saskatoon and St. Albert branch lines are operated with telephones.

NOTE. The new line from Battleford to Edmonton via Fort Pitt and Victoria was completed on 14th August, 1887, and on that date the old line via Strang and Leduc was abandoned.

Estimated cost of annual maintenance—salaries, supplies and repairs including the Wood Mountain Section—required in Estimates, 1888-89, \$10,000.

GOVERNMENT TELEGRAPH SERVICE—Continued.  
NORTH-WEST TELEGRAPH LINES.—WOOD MOUNTAIN AND FORT MACLEOD SECTIONS.

STATIONS.	Intermediate Distances.	Operator.	Salaries, per Annum.	Date of Appointment.	Memo.
	Miles.		\$		
<i>Fort Macleod Line—</i>					
1 Galt Junction.	0				
2 Lethbridge	107				
3 McLeod	28½				
4 Fort MacLeod.	½				
<i>Wood Mountain Line—</i>					
1 Moose Jaw	0	H. Rutherford	240 00		
2 Wood Mountain	90½	J. S. Macdonald.	720 00		
Total	226½		960 00		

The Fort Macleod line has been leased to the North-West Coal and Navigation Co. at 6 per cent. per annum upon cost of construction.

The Wood Mountain line is operated directly, as part of the Government Telegraph Service.

## GOVERNMENT TELEGRAPH SERVICE IN BRITISH COLUMBIA.

Offices.	Intermediate Distances.	Names.	Positions.	Salaries per month.	Date of Appointment	Remarks.
<b>Ashcroft Station</b>	Miles.					
Cache Creek	0					This line is now operated by the Canadian Pacific Railway Co. for the Government. The arrangement being terminable at any time.
Clinton	4					
Bridge Creek	26					
Boda Creek	53					
Quesnelle	78					
Stanley	54½					This line was leased for 99 years to Messrs. J. A. Laidlaw and J. Wilson, on the 30th October, 1887.
Barkerville	48					
	13					
<b>Branch.</b>	276½					
New Westminster						
Ledner's Landing (½ mile cable)	18					
<b>Total</b>	294½					

Estimated cost of maintenance, including general repair of line, \$6,500, required in Estimates, 1888-89.

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APPENDIX No. 14.

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TABULAR STATEMENTS

SHOWING THE DATES OF THE

OPENING AND CLOSING OF NAVIGATION

AT THE

PRINCIPAL PORTS OF CANADA,

ON THE SEABOARD AND ON THE GULF, RIVER, AND LAKES OF THE  
ST. LAWRENCE ;

ALSO, PORTS WHICH ARE ALWAYS OPEN.

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No. 1.—Statement of the Closing of Navigation in the Fall of 1897, and of the opening in the Spring of 1898.

Name of Port.	Location.	Closed in in 1897.	Opened in 1898.	Remarks.
Charlottetown, P.E.I.....	Gulf St. Lawrence.....	Dec. 27...	April 21...	Spring tides, 9½ ft.; neap tides, 8 ft. Depth of water at low water, at Railway Wharf, 20 ft.; at Queen's Wharf, 14 ft.
Georgetown do .....	do .....	Jan. 28, '98...	do 30...	Spring tides rise 5½ ft.; neaps, 4 ft.
Pictou, N.S.....	do .....	Dec. 26...	do 16...	Ferry steamer "Mayflower" continued running until 14th Feb., 1897, and resumed her trips on 23rd March, 1897. Neap tides rise about 4½ ft.; spring, 6 to 7 ft.
Sydney do .....	do .....	Jan. 10, '98...	do 25...	Spring tides rise 4 ft.; neaps, 2½ ft.
Shediac, N.B.....	do .....	Dec. 26...	May 8...	Spring tides rise 10 ft.; neaps, 8 ft.
Cambridge do .....	do .....	do 1...	do 1...	Spring tides rise 7 ft.; neaps, 4 ft.
Bathurst do .....	do .....	Nov. 25...	do 8...	Spring tides rise about 5 ft.
Percé, P.Q. ....	Gulf St. Lawrence .....	do 23...	April 22...	Rise and fall of tide, about 6 ft.
Gaspé Basin do .....	do .....	Dec. 25...	May 15...	Spring tides rise 23 ft.
Tadoussac do .....	River St. Lawrence .....	Nov. 24...	April 10...	Rise and fall of tide, from 13 to 18 ft.
Quebec do .....	do .....	do 23...	do 29...	
Sorel do .....	River Richelieu.....	do 30...	May 1...	
St. John's do .....	do .....	do 28...	April 19...	
Montreal do .....	River St. Lawrence .....	Dec. 23...	do 29...	
Kingston, Ont. ....	Lake Ontario .....	do 30...	do 12...	
Belleville do .....	do .....	Nov. 30...	do 23...	
Port Hope do .....	do .....	Dec. 12...	do 13...	
Toronto do .....	do .....	do 9...	do 7...	
Port Stanley do .....	Lake Erie .....	do 23...	March 31...	
Port Dover do .....	do .....	do 16...	April 7...	
Windsor do .....	Detroit River .....	do 16...	do 3...	The dates given are those of the last departure for and first arrival from ports at a distance. Virtually this harbour is never closed, as the ferry boats run constantly between this place and Detroit.
Sarnia do .....	Lake Huron .....	do 4...	do 9...	
Goderich do .....	do .....	Nov. 23...	do 28...	
Kincardine do .....	do .....	do 15...	May 2...	
Owen Sound do .....	Georgian Bay.....	Dec. 8...	do 4...	
Collingwood do .....	do .....	do 2...	April 30...	
Warton do .....	do .....	Jan. 20, '98...	May 1...	
Sault Ste. Marie do .....	Lake Superior .....	Dec. 1...	do 8...	
Port Arthur do .....	do .....	do 22...	do 21...	
Winnipeg, Man.....	Red River .....	Nov. 1...	April 28...	

No. 2.—STATEMENT showing some of the ports in the Dominion which are open to Navigation the whole year.

Name of Port.	County.	Province.	Depth of Water at Low Water.	Remarks.
Annapolis .....	Annapolis .....	Nova Scotia.....	15 to 20	In very severe winters thin ice forms but screw steamers could always enter.
Barrington .....	Shelburne .....	do .....	12 to 20	At anchorage. Wharves dry at low water.
Digby .....	Digby .....	do .....	18	About ten feet at end of steamboat pier
Halifax.....	Halifax.....	do .....	20 to 30	At wharves. 70 to 100 feet in harbour
Liverpool .....	Queen's .....	do .....	7	On bar. At Brooklyn 24 feet.
Lockport.....	Shelburne .....	do .....	8	
Lunenburg.....	Lunenburg.....	do .....	12	
Parrsboro' .....	Cumberland .....	do .....	40 to 60	Dry in harbour at low water.
Shelburne .....	Shelburne .....	do .....	18	
Yarmouth.....	Yarmouth.....	do .....	14	In inner harbour.
St. Andrews .....	Charlotte .....	New Brunswick.	20	At entrance of harbour. 60 feet in harbour.
St. John .....	St. John.....	do .....	6	30 feet at the ledge, 4 miles below the town.
St. Stephens .....	Charlotte .....	do .....	30 to 50	
*Tadoussac.....	Saguenay .....	Quebec.....	.....	Ferry boats cross Detroit River all winter.
Windsor .....	Essex.....	Ontario .....	.....	

\*See remarks respecting Tadoussac Harbour in Appendix No. 8, of general report 1867-1882.

Victoria, Nanaimo, Burrard Inlet and all other ports in British Columbia, up to Skeena River, are always open. New Westminster is liable to be closed 7 to 15 days. See telegram No. 34,027, from the Hon. J. W. Trutch, 3rd May, 1883.

*Tides in British Columbia.*—At Victoria ordinary springs rise from 7 to 10 feet, neaps 5 to 8 feet; at Nanaimo ordinary springs rise 14 feet, neaps 11 feet; at New Westminster ordinary springs rise 7 feet, neaps 4 feet; at Hastings, Burrard Inlet, ordinary springs rise 16 feet, neaps 12 feet; at Port Moody, ordinary springs rise 10 to 12 feet, neaps 5 to 6 feet. See telegram from Hon. J. W. Trutch, 25th October, 1883, No. 39,810.

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**APPENDIX No. 15.**

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**S T A T E M E N T S .**

**1ST.—CONTRACTS LET BY THE DEPARTMENT.**

**2ND.—PROPERTY PURCHASED BY THE DEPARTMENT.**

**3RD.—PROPERTY LEASED BY OR TO THE DEPARTMENT.**

**DURING THE FISCAL YEAR ENDED 30TH JUNE, 1888.**

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## APPENDIX No. 15.

Ref. No. 93,179.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 24th November, 1888.

SIR,—I have the honour to enclose the following statements which are required for insertion in the Annual Report for 1887-88, viz.:—

No. 1.—Statement of Contracts let by this Department during the fiscal year ended 30th June last.

No. 2.—Statement of Property purchased and sold by this Department during the same period.

No. 3.—Statement of Property leased to and by this Department during the same period.

I have the honour to be, Sir,

Your obedient servant,

F. X. R. SAUCIER.

A. GORRIL, Esq., Secretary,  
Department of Public Works.

No. 1.—CONTRACTS let by the Department of Public Works of Canada, from the 30th June, 1887, to the 30th June, 1888.

Works.	Names of Contractors.	Date of Contract.	Amount.
			\$ cts.
PUBLIC BUILDINGS.			
<i>Government House, Parliament and Departmental Buildings.</i>			
Parliament Building—Speaker's Chair.....	Morel & Gagnon.....	Sept. 29, 1887	250 00
do do Re-covering some roofs.....	Douglas Bros.....	Nov. 10, 1887	4,328 00
do do Covering 4 ventilators.....	do .....	June 15, 1888	800 00
Parliament and Departmental Buildings—Supply of coal.....	G. W. McCullough.....	July 4, 1887	7,279 25
Parliament and Departmental Buildings—Covering steps for winter.....	W. T. Odell .....	Nov. 12, 1887	210 00
Parliament and Departmental Buildings—Removal of snow.....	P. McKenna .....	do 25, 1887	610 00
Parliament and Departmental Buildings and Rideau Hall—Supply of ice.....	D. N. Charlebois.....	Feb. 27, 1888	217 04
Rideau Hall—Removal of snow.....	A. Hunter.....	Nov. 21, 1887	695 08

## No. 1—CONTRACTS let by the Department of Public Works, &amp;c.—Continued.

Works.	Names of Contractors.	Date of Contract.	Amount.
<b>PUBLIC BUILDINGS—Continued.</b>			<b>\$ cts.</b>
<i>Nova Scotia.</i>			
Amherst Public Building—Asphalt pavement and wooden fence.....	Rhodes, Curry & Co...	Oct. 7, 1887	410 00
do do Supply of coal.....	Acadia Coal Company	Aug. 8, 1887	260 08
Antigonish do do .....	J. Kenna .....	do 8, 1887	67 50
Arichat do do .....	Capt. J. Leblanc.....	July 25, 1887	90 00
Baddeck, C.B. do do .....	J. McDonald.....	Sept. 7, 1887	87 50
Halifax Public Buildings do .....	Acadia Coal Company	Aug. 8, 1887	821 50
New Glasgow Public Building—Supply of water.....	Corporation of the Town of New Glasgow	Dec. 9, 1887	p.m. 408 00
do do Supply of coal. ....	Acadia Coal Company	Aug. 8, 1887	171 24
Pictou Marine Hospital—Heating apparatus.....	Muirhead & Co. ....	Oct. 11, 1887	638 00
do do Supply of coal .....	Acadia Coal Company	Aug. 8, 1887	48 72
do Custom House—Heating apparatus .....	O. B. Thompson .....	Oct. 18, 1887	1,325 00
do Public Building—Supply of coal .....	J. Read .....	July 19, 1887	115 38
Truro Public Building—Supply of coal.....	Acadia Coal Company	Aug. 8, 1887	125 00
Windsor do do .....	do do ...	do 8, 1887	230 52
Yarmouth do do .....	do do ...	do 8, 1887	260 00
<i>Prince Edward Island.</i>			
Charlottetown Public Building—Supply of coal....	O. Lyons .....	Aug. 29, 1887	391 60
Montague do do .....	Capt. J. McKvoy.....	do 23, 1887	68 13
Summerside do do .....	J. Read.....	July 19, 1887	276 77
<i>New Brunswick.</i>			
Bathurst Public Building—Supply of coal.....	T. F. Gillespie.....	July 23, 1887	341 33
Carleton (St. John) Post Office—Supply of electric light .....	The Carleton Electric Light Company.....	June 1, 1888	p.m. 150 00
Chatham Public Building—Supply of coal .....	T. F. Gillespie.....	July 23, 1887	123 29
Fredericton do do .....	W. L. Busby.....	do 30, 1887	340 51
Moncton do do .....	Acadia Coal Company.	Aug. 8, 1887	291 85
Newcastle do do .....	T. F. Gillespie.....	July 23, 1887	361 22
Portland do do .....	R. P. & W. F. Starr...	do 30, 1887	26 98
St. John Post Office and Savings Bank and Marine Hospital—Supply of coal.....	do do ....	do 30, 1887	703 39
St. John Post Office and Custom House—Supply of coal.....	W. L. Busby.....	do 30, 1887	130 19
St. Stephen Public Building—Supply of coal.....	O. D. Hill & Co.....	Sep. 10, 1887	164 50
Sussex do do .....	R. P. & W. F. Starr...	July 30, 1887	180 18
Woodstock do do .....	do do ....	do 30, 1887	174 99
<i>Quebec.</i>			
Aylmer—Erection of Post Office. ....	D. B. McDonald.....	May 28, 1888	6,830 00
Coaticook do .....	T. T. Shurtleff.....	Jan. 23, 1888	12,000 00
Hull Public Building—Supply of coal.....	McRae & Co.....	July 22, 1887	362 41
Joliette—Erection of Post Office. ....	G. Beaucage.....	Apr. 20, 1888	11,500 00
Montreal Drill Hall—Furnishing armories.....	J. B. St. Louis & Bro..	Feb. 22, 1888	10,870 35
do Custom House—Recovering roof with copper .....	Garth & Co.....	Aug. 16, 1887	4,546 35
Montreal Public Buildings—Supply of coal.....	J. O'Brien & Co. and F. Robertson.....	Aug. 1, 1887	1,667 17
Quebec do do .....	G. M. Webster & Co..	July 26, 1887	1,556 94
Sherbrooke do do .....	Lucke & Mitchell.....	do 27, 1887	233 73
Sorel do do .....	H. O. Charland & Co..	do 30, 1887	249 25
do do Clock for tower.....	E. Chanteloup .....	Nov. 2, 1887	2,000 00
do do Completion of clock tower.....	G. Beaucage.....	Feb. 27, 1888	385 00

## No. 1.—CONTRACTS let by the Department of Public Works, &amp;c.—Continued.

Works.	Names of Contractors.	Date of Contract.	Amounts.
<b>PUBLIC BUILDINGS.—Continued.</b>			<b>\$ cts.</b>
<b>Quebec—Concluded.</b>			
St. Jérôme—Erection of Post Office.....	J. Fitzpatrick.....	Jan. 27, 1888	11,650 00
St. John's Public Building—Supply of coal .....	Simard & Godin .....	July 30, 1887	160 00
St. Vincent de Paul Penitentiary—Heating pipes and fittings, Catholic Chapel, keeper's hall and three dormitories .....	Garth & Co. ....	Sep. 1, 1887	4,929 30
Three Rivers Custom House—Heating apparatus.....	Drapeau, Savignac & Co .....	Oct. 10, 1887	2,234 00
do Public Buildings—Supply of coal. ....	Z. Marchand.....	Aug. 1, 1887	313 61
<b>Ontario.</b>			
Amherstburg Public Building—Supply of coal.....	J. G. Mullen.....	Sep. 14, 1887	192 19
Barrie do Complete stone fence .....	J. Armstrong.....	Nov. 8, 1887	1,924 60
do do Supply of coal .....	J. S. Johnston .....	Aug. 23, 1887	258 00
Belleville do do .....	Downey & Preston.....	July 28, 1887	385 00
do do Supply of electric light.....	Belleville Gas Co. ....	Apr. 24, 1888	p. an. 93 90
Berlin Public Building—Supply of coal .....	J. Fennell.....	Aug. 4, 1887	93 20
Brantford do do .....	Jno. Mann & Sons. ....	July 29, 1887	263 18
Brockville do do .....	Canada Central Coal Co .....	do 29, 1887	201 25
Cayuga—Erection of Post Office .....	T. & R. Draper. ....	Nov. 23, 1887	7,874 00
Chatham Public Building—Supply of coal.....	H. A. Patteson & Co... ..	July 26, 1887	70 00
Clifton Public Building—Supply of coal.....	G. H. Howard & Co....	July 28, 1887	250 00
Gebeorg do Alterations .....	W. Battell.....	Dec. 17, 1887	1,246 00
do do Supply of coal.....	Hargratt & Co. ....	Aug. 19, 1887	220 00
Gerrard do do .....	Grant & Conroy .....	July 30, 1887	172 50
Galt do do .....	J. Valcorm .....	do 30, 1887	173 65
Gasarogue—Erection of Post Office .....	G. Wilson .....	Dec. 5, 1887	9,500 00
do Custom House—Supply of coal.....	The Rathbun Co .....	July 28, 1887	145 00
Hamilton Drill Hall—Alterations .....	M. A. Pigott.....	Oct. 29, 1887	3,701 75
do Public Building—New furnaces and connections for the heating apparatus .....	A. Clark. ....	do 4, 1887	1,750 00
do Public Building—Supply of coal.....	A. E. D. Mackay's Sons	July 28, 1887	1,247 27
do do Water supply for building and for running elevator...	Waterworks Committee, Hamilton.....	Apr. 27, 1888	p. an. 1,000 00
London Public Building—Supply of coal. ....	J. P. O'Byrne. ....	Aug. 1, 1887	839 95
Kingston Custom House and Post Office—Supply of coal.....	W. B. & S. Anglin ....	do 2, 1887	1,135 67
Kingston Penitentiary—1 generator, 1 super-heater, 1 purifier, for gas works .....	Davidson, Doran & Co.	Jan. 11, 1888	1,012 00
London Custom House—Completing steam heating.	W. J. Burroughes.....	Sep. 17, 1887	2,716 68
do Infantery School—Heating apparatus .....	McGuire & Bird. ....	do 17, 1887	8,999 00
Napanee Public Building.....	G. Newlands. ....	Jan. 25, 1888	25,350 00
Ottawa Experimental Farm—Residence for Supt....	F. Toms .....	July 5, 1887	9,800 00
do do Barn and stabling .....	Wm. Stuart .....	Aug. 22, 1887	17,200 00
do do 4 residences for staff..	Tobin & O'Keefe.....	Oct. 18, 1887	18,844 00
do do Heating apparatus for 5 residences .....	J. G. Johnson & Co....	Mar. 28, 1888	3,470 00
do do Excavating cellars and building masonry...	Tobin & O'Keefe .....	May 8, 1888	1,800 00
do do Museum and Offices.....	Wm. Stuart.....	June 6, 1888	11,445 00
do Printing Bureau—Shed for the use of. ....	L. Gratton. ....	Apr. 6, 1888	650 00
do Victoria Hall—Galvanised iron-work .....	J. R. Esmonde.....	Feb. 11, 1888	222 75
do do Carpenter's work .....	W. Palen .....	Jan. 24, 1888	795 00
Orangeville Public Building—Supply of coal.....	J. Morrison .....	Aug. 5, 1887	161 25
Peterborough Post Office—Fittings.....	J. E. Askwith.....	July 27, 1887	2,500 00
do Public Building—Supply of coal.....	Peterborough Gas Co.	do 28, 1887	241 09

No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Continued.*

Works.	Names of Contractors.	Date of Contract.	Amount.
			\$ cts.
<b>PUBLIC BUILDINGS—<i>Concluded.</i></b>			
<b>Ontario—<i>Concluded.</i></b>			
Peterborough Public Building—Heating apparatus..	McAndrew & Noble....	Oct. 7, 1887	1,210 75
Pembroke—Retaining wall on site for Public Building	Munro & Beatty.....	Nov. 4, 1887	2,400 00
Port Hope Public Building—Supply of coal.....	J. A. Brown & Co.....	Aug. 3, 1887	142 50
St. Catharines Post Office do .....	E. Gadsby and H. O'Loughlin.....	do 6, 1887	151 08
St. Thomas Public Building do .....	J. Ellison.....	do 11, 1887	353 35
Stratford do do .....	Wyles & Son.....	do 11, 1887	1,353 35
Toronto Public Buildings do .....	Whiteside & Bell.....	July 28, 1887	620 00
Trenton Public Building—Construction .....	W. A. Ford .....	Dec. 2, 1887	22,950 00
do do Clock and bell tower and drain .....	do .....	Apr. 20, 1888	4,525 00
Windsor Public Building—Supply of coal.....	J. & T. Hurley.....	July 29, 1887	364 00
<b>North-West Territories.</b>			
Battleford—Guard room for N. W. M. Police .....	J. N. Pomerlean .....	Oct. 24, 1887	2,899 80
Calgary—Barrack building and hospital.. ..	Kennedy & Heney.....	Dec. 21, 1887	20,528 00
do Stone foundation under police barracks...	do .....	Apr. 30, 1888	4,800 00
Regina jail—Additional works.....	D. McDougall.....	Aug. 15, 1887	1,400 00
<b>British Columbia.</b>			
New Westminster Penitentiary—Residence for unmarried men .....	Ackerman Bros.....	Mar. 27, 1888	4,993 00
<b>HARBOURS AND RIVERS—DREDGING AND DREDGE VESSELS.</b>			
<b>Nova Scotia.</b>			
Bayfield—Repairing wharf .....	S. O'Donoghue.....	Nov. 1, 1887	7,500 00
Digby—Removal of detached sunken block.....	Brown & Oliver.....	Apr. 4, 1888	1,800 00
Sheet Harbour—West River—Ballast wharf.....	J. McMillan.....	Dec. 15, 1887	1,497 00
<b>New Brunswick.</b>			
Anderson's Hollow—Rocher Bay—Extension of break-water .....	Anderson & Barbour...	Dec. 6, 1887	2,856 00
Bay Verte—Ballast wharf .....	Prescott & Gray .....	Nov. 28, 1887	4,500 00
Belliveau—Wharf. ....	J. McFarlane .....	Mar. 1, 1888	1,737 00
Cape Tormentine—Wharf. ....	E. Murphy .....	Apr. 28, 1888	Sched. rates..
St. John Harbour—Repairing and re-constructing portion of face wall—Fort Dufferin Glacis.....	G. S. Mayes .....	Nov. 24, 1887	2,834 00
St. John Harbour—Re-constructing outer portion of eastern wharf at Partridge Island .....	Wallace & Thompson..	do 24, 1887	2,148 00
<b>Quebec.</b>			
*Cap de la Madeleine—Pier. ....	Municipality of Cap de la Madeleine.....	Aug 29, 1887	3,000 00
Portage du Fort Bridge—Painting.. ..	Grant and Coyne.....	Sept 24, 1887	Schedule.
Ste. Adelaide de Pabos—Pier ....	F. LeMoire.....	June 22, 1888	11,500 00
Three Rivers—Ice pier .....	T. E. Normand.....	Nov. 10, 1887	1,300 00



No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Concluded.*

Works:	Names of Contractors.	Date of Contract.	Amount.
<b>HARBOURS AND RIVERS—DREDGING AND DREDGE VESSELS.</b>			<b>\$ cts.</b>
<i>Ontario.</i>			
Cobourg—Rebuilding of portion of western pier .....	J. W. Dinwoodie .....	Mar. 24, 1888	7,200 00
Collingwood—Construction of crib work to close gap between old slab wharf and outer breakwater....	Fleming, Lindsay & Burdette. ....	Feb. 17, 1888	6,995 00
Goderich—Sluice. ....	D. Porter. ....	Nov. 7, 1887	10,500 00
Midland Harbour—Dredging .....	P. Navin. ....	Mar. 31, 1887	Schedule.
Tolsma Bay—Pier on the west side. ....	Porter & Reed. ....	Sept. 30, 1887	7,000 00
<i>North-West Territories.</i>			
Battleford—Highway bridge across Battle River ....	Kennedy & Heney. ....	May 2, 1888	24,500 00
<i>Dredge Vessels.</i>			
Boiler for dredge "Geo. McKenzie". ....	Geo. Fleming & Son ...	July 18, 1887	750 00
Victoria, B. C.—Construction of a tug boat. ....	Albion Iron Works Co.	Dec. 1, 1887	12,700 00
<b>TELEGRAPH LINES.</b>			
N.-W. Territories—Erecting telegraph poles between Qn' Appelle and Humboldt .....	J. Carson. ....	July 29, 1887	457 76
N.-W. Territories—Supply of poles for line from Clark's Crossing to Prince Albert. ....	Baptiste Boyer .....	Apr. 30, 1888	1.25 per pole
Ontario—To construct and equip line between Col- poys Bay and Irobermory .....	G. N. W. Tel. Co. ....	Oct. 11, 1887	5,600 00

— \*\$3,000 were contributed by the Government and \$2,000 by the Municipality. Works carried out from plans approved by the Department.

F. X. R. SAUCIER.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 24th November, 1888.

Date of Conveyance.	Vendor.	Purchaser.	Description of Property.	For what Purpose.	Area.	Price.
July 23, 1887.	Corporation of the Village of Gananoque....	Her Majesty	Parts of lots 13 and 14, Block O, in the Village of Gananoque, Ont.....	Site for Post Office.....	3,600 super. ft....	\$ cts. 1 00
Aug. 19, 1887.	S. Jonasson & F. Fredericksen.....	do	Tug Boat "Victoria".....	Dredging.....	.....	3,400 00
July 20, 1887.	Hon. Frs. Olemow.....	do	Lot No. 13, with building thereon, corner of Queen and O'Connor Streets, Ottawa, "Victoria Hall".....	Fishery Exhibit.....	.....	10,000 00
Sept. 13, 1887.	Her Majesty	T. D. Adams	Old Custom House Building, Newcastle, N.B.....	No longer required by Dept.....	.....	1,200 00
Oct. 1, 1886.	do	O.P. Ry. Co.	Certain telegraph lines in British Columbia.....	.....	.....	15,780 00
July 1, 1887.	do	J. B. Bougie, Junr.....	Parts of cadastral Nos. 558 and 567, Parish of St. Louis de Gonzague, Quebec.....	No longer required by Dept.....	3 roads, 28 perch 68 X 186 ft. and lane.....	4,000 00
Oct. 20, 1887.	The Incorpor'd Synod of the Diocese of Toronto	Her Majesty	Lot on Kent Street, Lindsay, Ontario.....	Site for Post Office.....	11,160 super. ft. 7,840 do	4,000 00 800 00 500 00
Dec. 7, 1887.	J. Thompson.....	do	Cadastral lot No. 759, Main Street, Aylmer.....	do do	.....	3,500 00
do 12, 1887.	J. Sadler.....	do	Part of lot No. 45, Dalhousie, N.B.....	do do	.....	250 00
Jan. 17, 1888.	R. McCarthy.....	do	Parts of lots Nos 7 and 8, Block 2, Prescott, Ontario.....	do do	.....	.....
Dec. 9, 1887.	A. Murray.....	do	West half of lot No. 1 and part of lot No. 12, at Cayuga, Ontario.....	do do	4,000 super. ft..	.....
Feb. 16, 1888	Mrs. Wid E. McPhadden	do	Part of east half of lot No. 3, Township of Hawkesbury, County of Prescott, Ontario	Access to slide and booms at Carillon.....	15,160 do	100 00
do 24, 1888.	A. McIntyre.....	do	Lots 46, 47 and 48, Maple St. Winnipeg, Man.	Site for Immigrant Building	.....	5,000 00
Jan. 21, 1888.	J. Livingston et ux.....	do	Parcel of land at Big Bras D'Or, N.S.....	Right of way to and from site for wharf.....	2,500 super. ft.... 1,100 do	1 00 1 00
do 21, 1888.	D. Livingston et ux.....	do	Strip do do do	Approach to wharf.....	.....	200 00
Mar. 11, 1887.	J. B. North et ux.....	do	Half acre of land including Curry's wharf in Horton's Landing, N.B.....	.....	.....	.....
Oct. 26, 1887.	U. Leblanc.....	do	Two-thirds of south-west part of cadastral lot No. 304, N. Dame St. Joliette, Quebec.....	Site for Public Building.....	.....	3,500 00
Feb. 3, 1888.	Mrs. B. E. Anderson.....	do	Release of the <i>rente constituée seigneuriale</i> on next above.....	do do	.....	26 75
April 12, 1888.	T. N. Dancy et ux.....	do	Lot No. 5, south side of West Street Goderich, Ontario.....	do do	1 acre.....	1,000 00

DEPARTMENT OF PUBLIC WORKS, OTTAWA, 24th November, 1888.

F. X. R. SAUCIER,

No. 3.—Statement of Property and Rights leased to and by the Department of Public Works during the Fiscal Year ended 30th June, 1888.

Date of Lease.	Lessor.	Lessee.	Property Leased.	For what purpose used.	Duration of Lease.	Rent payable.
1887.						\$ cts.
Aug. 10...	Her Majesty .....	Corporation of the City of New Westminster.	Lands near the Penitentiary Reserve—New Westminster, B. C.	Right of way for C. P. R.	99 years .....	50 00 p. an'm
do 24...	do .....	School Trustees, Hamilton, Ont.	Old Custom House .....	School purposes .....	1 year .....	100 00 do
Oct. 13...	do .....	Municipal Council of the City of Hamilton.	Old Post Office. ....	Municipal offices .....	2 years and 7 months.	1,000 00 do
do 28...	do .....	J. A. Laidlaw & J. Wilson.	Telegraph line between New Westminster and Ladner's Landing, B. C.	.....	99 years .....	1 00 do
1888.						
Jan. 9...	A. D. Richard .....	Her Majesty .....	Uppermost flat of building, Nos. 537 and 539, Sussex St., Ottawa.	Geological Museum .....	1 year .....	200 00 do
Feb. 29...	Proprietor Victoria Chambers .....	do .....	One room in Victoria Chambers, Ottawa.	Department of the Interior.	.....	12 00 do
Jan. 5...	L. Gratton .....	do .....	Ground floor of building corner McKenzie Avenue and St. Patrick St., Ottawa.	Government Printing Bureau.	As long as required.	30 00 p. mo..

F. X. R. SAUCIER,

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 24th November, 1888.



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**APPENDIX No. 16.**

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**LIST OF SOME OF THE ACTS OF PARLIAMENT**

**PASSED AT THE SESSION OF 1888**

**AND HAVING REFERENCE TO**

**THE DEPARTMENT OF PUBLIC WORKS.**

**OR WORKS UNDER ITS CHARGE.**

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## APPENDIX No. 16.

Ref. No. 93,112.

LIST of some of the Public Acts of the Parliament of Canada, passed at the Second Session of the Sixth Parliament of Canada, ended on the twenty-second day of May, 1888, and having reference to the Public Works Department, or works under its charge.

Subject.	Full Title of the Statute.	Chapter.	Page in Statute Book.
Sums granted to Her Majesty for the financial year ending 30th June, 1889, and the purposes for which they are granted.	An Act for granting to Her Majesty certain sums of money required for defraying certain expenses of the public service for the financial years ending respectively the 30th June, 1888, and the 30th June, 1889, and for other purposes relating to the public service.	1	3
Concerning the debt of the Corporation of the Harbour Commissioners of Montreal to the Government of Canada.	An Act to make further provision respecting the construction of the ship channel between Montreal and Quebec.	5	53
The graving dock at Lévis, Que., to become a public work of Canada, &c.	An Act relating to certain advances made to the Quebec Harbour Commissioners.	6	55
As to yearly return of accounts of the appropriation of the several supply grants.	An Act to amend "The Consolidated Revenue and Audit Act," chapter twenty-nine of the Revised Statutes of Canada.	7	57
Public Officers.....	An Act to amend "The Civil Service Act," chapter seventeen of the Revised Statutes of Canada.	12	71
Printing and Stationery. ....	An Act to amend chapter twenty-seven of the Revised Statutes, respecting the Department of Public Printing and Stationery.	17	105
Preservation of Submarine Telegraph Cables.	An Act respecting the International Convention for the Preservation of Submarine Telegraph Cables.	31	232
Yearly return to be sent to the Minister of Public Works, Vol. II (Section 16).	An Act relating to the Upper Ottawa Improvement Company.	102	273

N.B.—In the Vol. of the Statutes of Canada, 1888, will be found the following :—

Page clxiv—By-law as to the Quebec Graving Dock.

Page clxvii—Rules and Regulations for the management and working of the Graving Dock at Esquimaux, B.C.

F. X. R. SAUCIER.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 22nd November, 1888.





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APPENDIX No. 17.

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NATIONAL ART GALLERY.

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CURATOR'S REPORT.

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## APPENDIX No. 17.

## NATIONAL ART GALLERY.—CURATOR'S REPORT.

Ref. No. 92,613.

NATIONAL ART GALLERY,

OTTAWA, 3rd November, 1888.

SIR,—I have the honour to report the following additions to the Gallery received during the fiscal year ended 30th June, 1888 :—

Oil painting by R. Harris, R. C. A. "Fathers of Confederation."

Oil paintings, six in number, by Paul Kane.

Oil paintings, two in number, by Mons. Plomondin.

The above pictures were removed from the House of Commons to the Gallery, the latter being considered more suitable with regard to light, &c.

The number of visitors to the Gallery has steadily advanced from year to year since its inauguration in 1882. During the fiscal year 16,593 visitors registered their names, an increase of 4,650 over the attendance of preceding year. Public interest has also been manifested by the many donations of works of Art; for with few exceptions the collection is a free gift to the Government.

Early in the year the Gallery was removed from the Supreme Court building to the present Gallery on O'Connor street. Considerable alterations were found necessary to render the rooms suitable; they are now well lighted and convenient, with space to spare for additional works of Art. In order to maintain interest in the Gallery it is of the utmost importance that additions be made each year, and that such additions be of a high class of Art, works worthy of a National Collection.

I have the honour to be, Sir,

Your obedient servant,

JOHN W. H. WATTS,

*Curator.*

A. GORRIL, Esq.,  
Secretary, Department of Public Works,  
Ottawa.



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APPENDIX No. 18.

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OFFICERS OF THE DEPARTMENT.

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## APPENDIX

**Members, Commissioners and Assistant Commissioners of the Board of Works,  
Architects of the Department of**

Chairman, Commissioners and Ministers.			Assistant Commissioners and Deputy Ministers.	
Names.	From	To	Names.	Date of Appointment.
<i>Under Statute 4-5 Vic., Cap. 38, Corporation of Board of Works.</i>				
Hon. H. H. Killaly, Chairman.....	.....	.....	.....	.....
D. Daly ..... } S. B. Harrison.... } Members.. J. Davidson ..... }	Dec. 29, 1841	Oct. 3, 1844		
<i>New Board of Works.</i>				
Hon. H. H. Killaly, Chairman....				
D. Daly ..... } W. H. Draper.... } Members.. W. Morris..... } D. B. Papineau }	Oct. 5, 1844	June 8, 1846		
<i>Under Statute 9 Vic., Cap. 37, etc.</i>				
Hon. W. B. Robinson, Chief Commissioner..	July 4, 1846	Mar. 10, 1848	Hon. Chas. Ens. Casgrain, Assist. Commissioner .....	Aug. 1, 1846
E. P. Taché do ...	Mar. 11, 1848	Nov. 26, 1849	Hon. M. Cameron, Asst. Commissioner .....	Mar. 11, 1848
J. Chabot do ...	Dec. 15, 1849	Mar. 31, 1850	Jno. Westenhall, Asst. Commissioner .....	Feb. 2, 1850
W. H. Merritt do ...	April 20, 1850	Feb. 11, 1851	Hon. Jos. Bourret, Asst. Commissioner .....	April 20, 1850
J. Bourret do ...	Feb. 15, 1851	Oct. 27, 1851	Hon. H. H. Killaly, Asst. Commissioner .....	Feb. 15, 1851
John Young do ...	Oct. 28, 1851	Sept. 23, 1852	.....	.....
J. Chabot do ...	Sept. 23, 1852	Jan. 26, 1855		
F. Lemieux do ...	Jan. 27, 1855	Nov. 25, 1857		
C. Alleya do ...	Nov. 18, 1857	Aug. 1, 1858		
L. H. Holton do ...	Aug. 2, 1858	do 6, 1858		
L. V. Sicotte do ...	do 6, 1858	Jan. 10, 1859	Samuel Keefer, Asst. Commissioner .....	May 6, 1859
John Rose do ...	Jan. 15, 1859	June 12, 1861		
Jos. Cauchon, Commissioner. June 15, 1861	June 15, 1861	May 23, 1861		
U. J. Tessier do ...	May 24, 1862	do 27, 1863		
L. T. Drummond do ...	do 28, 1863	July 23, 1863		
M. Laframboise do ...	July 23, 1863	Mar. 29, 1864	Toussaint Trudeau, Asst. Commissioner .....	Mar 15, 1864
J. C. Chapais do ...	Mar. 30, 1864	June 30, 1867		
<i>Under Statute 31 Vic., Cap. 12.</i>				
Hon. Wm. McDougall, Minister. ...	July 1, 1867	Oct. —, 1869	Toussaint Trudeau, Deputy Minister....	May —, 1869
Hon. H. L. Langevin, C.B. do ....	Dec. 8, 1869	Nov. 5, 1873		
Hon. Alexander Mackenzie do ....	Nov. 7, 1873	Oct. 16, 1878		
Sir Chas. Tupper, O.B., K.C.M.G., Minister. ....	Oct. 17, 1878	May 20, 1879		
Sir Hector L. Langevin, C.B., K.C.M.G., Minister. ....	May 20, 1879	.....	G. F. Baillairgé, Deputy Minister ...	Oct. 4, 1879

## No. 18.

and of the Ministers, Deputy Ministers, Secretaries, Chief Engineers and Chief Public Works, from 1841 to 1888.

Secretaries.		Chief Engineers.		Chief Architects.	
Names.	Date of Appointment.	Names.	Date of Appointment.	Names.	Date of Appointment.
Thomas A. Begly...	Aug. 17, 1841.	Samuel Keefer...	Aug. 17, 1841.	F. P. Rubidge, Architect and Asst. Engineer	Dec. 15, 1841.
Thomas A. Begly, under Act estab- lishing Dept. of Public Works .....	Sept. 25, 1847.				
.....	.....	John Page.....	Oct. 31, 1853.		
Yousaint Trudeau.	Dec. 13, 1859.				
Frederick Braun....	March 8, 1864				
.....	.....	G. F. Ballairgé, Asst. Chief En- gineer .....	July 5, 1871.	Thos. S. Scott...	Feb. 7, 1872.
{ B. Chapleau ..... F. H. Ennis..... A. Gobeil, .....	Oct. 4, 1879. Nov. 4, 1880. Jan. 23, 1888.	H. F. Perley.....	Nov. 25, 1880.	Thos. Fuller....	Oct. 31, 1881.





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**APPENDIX No. 19.**

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**OFFICIAL CORRESPONDENCE**

**From 1st July, 1867, to 30th June, 1888.**

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## APPENDIX No. 19.

## OFFICIAL CORRESPONDENCE.

Letters Received and Sent from 1st July, 1867, to 30th June, 1888.

Years.			Received.	Sent.
1867	From 1st July to 31st December		2,075	1,511
1868	do 1st January to 31st December		3,498	2,317
1869	do do do		3,448	2,171
1870	do do do		4,981	3,185
1871	do do do		6,268	3,983
1872	do do do		8,333	4,428
1873	do do do		10,072	5,707
1874	do do do		9,800	5,043
1875	do do do		9,606	5,006
1876	do do do		7,971	4,773
1877	do do do		7,817	4,425
1878	do do do		6,886	4,051
1879	do do to 6th October		7,186	4,647
1880	do 7th October to 31st December		2,033	810
1881	do 1st January do		8,451	4,410
1882	do do do		9,589	5,529
1883	do do do		10,505	5,599
1884	do do do		11,533	6,227
1885	do do do		13,114	6,903
1886	do do do		18,977	5,321
1887	do do do		9,644	5,352
1888	do to 30th June		4,866	2,735
1888	do 1st July do 1888		10,491	6,343

\* By an Order in Council, approved on 19th May, 1879, published at page 1496, of the *Canada Gazette*, the 30th May of that year was fixed as the day for separating the Department of Railways and Canals from the Department of Public Works, in accordance with Act 42 Vic., cap. 7. The staff of clerks and clerks of the Department of Public Works continued to manage in common the business of the two Departments until the 1st October, when an Order in Council was approved dividing the staff between the two Departments. The first letter of the new Department of Public Works was written on 1st October.

The above list does not include the correspondence of the chief officers of the Department with his assistants and the public, which averages over 10,000 letters per year, nor the Departmental and the cheques sent out, of which above 5,000 are mailed during each fiscal year.

† The decrease in the number of letters received and sent is not caused by any actual diminution of letters, but by a change in the manner of filing since 1st April, 1885. Up to that date all accounts were registered singly, and a letter accompanied each payment. Now, accounts are filed by subjects, twenty or thirty or forty accounts being sometimes covered by one number and printed slips have been substituted for the letters which formerly accompanied payments. A very considerable saving of time has been effected by these changes, and the business of the Department greatly facilitated.



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APPENDIX No. 20.

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**YEARLY EXPENDITURE**

**IN EACH PROVINCE**

**ON**

**CONSTRUCTION AND IMPROVEMENTS**

**OF**

**PUBLIC WORKS, CANADA,**

**By O. DIONNE, Accountant.**

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Fiscal Year.	Nova Scotia.	P. E. Island.	New Brunswick.	Quebec.	Ontario.	Manitoba.	North-West Territories.	British Columbia.	Miscellaneous.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
1868...	485,206 86	...	23,090 19	138,939 77	133,510 38	...	...	...	130 18	779,877 39
1869...	212,068 11	...	108,272 81	62,432 99	182,298 76	...	...	...	...	570,385 80
1870...	410,800 64	...	1,020,317 42	387,969 49	202,915 99	4,218 13	...	...	...	2,092,751 44
1871...	1,63,816 09	...	908,169 15	1,993,881 24	267,730 86	52,565 60	15,232 30	...	...	3,536,802 00
1872...	1,798,130 55	...	2,544,835 81	1,870,722 99	768,469 69	7,717 15	17,433 35	16,074 16	...	7,708,413 30
1873...	1,653,722 15	...	2,879,378 32	1,814,503 69	1,097,752 09	146,805 44	...	274,681 44	2,776 32	7,432,073 81
1874...	1,127,514 47	...	2,141,317 86	1,594,390 78	1,593,625 49	131,128 07	...	145,292 61	2,350 55	6,729,834 67
1875...	1,433,812 58	...	9,636,311 56	6,792,749 95	4,182,392 62	120,806 13	32,676 65	639,392 00	12,015 21	25,444,011 41
1876...	681,243 17	...	1,792,061 44	1,598,187 87	2,401,697 15	321,487 20	236,383 63	532,532 08	14,650 97	8,391,236 69
1877...	566,314 11	...	694,539 87	1,897,276 70	4,143,771 35	967,928 23	614,864 87	423,065 32	8,519 56	8,991,092 82
1878...	238,412 84	...	773,253 07	2,303,292 78	3,941,443 00	383,871 58	138,611 87	327,524 21	6,870 89	8,706,637 11
1879...	238,123 09	...	436,194 40	1,701,403 30	3,736,133 59	956,835 99	71,343 44	160,121 97	8,886 99	7,372,911 60
Total	3,159,935 79	606,768 80	3,941,227 20	8,471,818 77	17,875,816 64	3,083,271 41	1,077,394 41	1,522,913 57	55,766 56	39,794,873 15
1880...	169,014 87	49,765 99	432,963 85	2,714,939 97	3,616,606 62	1,708,014 88	67,387 99	144,545 54	12,455 36	6,985,731 07
1881...	260,033 89	57,068 44	361,881 26	1,500,736 14	4,047,265 07	947,639 03	45,281 13	1,037,396 36	16,217 85	8,290,841 17
1882...	362,971 93	87,611 02	263,395 20	1,408,636 04	2,676,546 33	58,083 32	1,754,679 21	1,719,138 91	36,036 23	8,417,137 19
1883...	860,158 63	191,440 63	630,297 27	2,192,518 17	3,349,294 61	81,321 08	4,190,399 58	3,861,591 91	35,818 86	15,040,652 76
1884...	1,610,310 55	177,486 08	714,798 96	2,311,485 25	6,861,846 48	184,161 40	80,424 16	6,831,360 95	69,469 48	18,961,245 29
1885...	427,428 44	183,968 40	716,212 39	1,573,165 61	7,751,251 67	167,765 69	91,242 91	4,409,696 83	50,670 03	15,391,418 73
1886...	411,712 51	128,579 72	755,543 47	2,047,360 65	3,428,376 25	258,480 31	123,916 13	3,831,518 28	24,914 71	10,810,160 03
1887...	688,260 61	61,768 67	451,846 85	1,466,949 51	2,71,889 89	137,717 77	214,591 60	1,443,420 22	29 58	7,146,794 70
Total	4,519,911 33	770,630 93	4,348,937 25	15,345,844 31	34,283,031 85	3,532,933 48	6,168,191 70	21,299,670 91	245,662 15	91,933,773 94
Grand Total	14,441,245 99	1,466,399 73	17,916,476 01	30,610,413 06	56,341,141 11	7,141,470 41	7,673,201 76	25,460,886 48	313,443 95	161,372,678 50

O. DIONNE,  
Accountant.





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APPENDIX No. 21.

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ENGINEERS AND THEIR ASSISTANTS EMPLOYED  
ON  
PUBLIC WORKS,  
CANADA,  
1815 to 1889.

SO FAR AS ASCERTAINED, EXCLUSIVE OF RAILWAYS, IN MOST CASES.

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**N.B.—Errors or omissions will be rectified in next annual report, if notice thereof is sent to the undersigned.**

An Alphabetical List of Canal Superintendents, and another of the most important Works on which Engineers have reported, or been employed, will be published in a subsequent report.

OTTAWA, 24th November, 1888.

C. F. BAILLAIRGE,  
D. M. P. W.



## APPENDIX No. 21.

(Ref. No. 93,301.)

ENGINEERS employed on Public Works, Canada, 1817 to 1889, so far as ascertained, exclusive of Railways.

Engineers.	Works.	Dates of Employment.
Allison, J. O.....	Assistant Engineer, Harbours, Maritime Provinces.....	Oct., 1883-88.
Anderson, W. P.....	Chief Engineer, Department of Marine and Fisheries.....	23rd Oct., 1874-88.
Armstrong, Captain Charles Logie .....	Lake St. Peter, dredging, &c.....	1857-67.
Arnoldi, John Roger...	Chief Mechanical Engineer.....	6th Dec., 1859.
	Superintendent dredge vessels and dredging, Ontario and Quebec.....	1880-89.
Asterbrooks, Captain..	Mechanical Engineer, Public Buildings, Ottawa, &c.....	7th July, 1883-88.
	Engineer Royal Artillery, first attempt to place a cable for Suspension Bridge at Ottawa.....	1876.
Atherton, Charles.....	Lake St. Peter, dredging, in charge of surveys and investigations.....	1842-43.
	Specification of dredge vessels, &c.....	9th Sept., 1842.
Austin, G. F.....	Chantry Island breakwater, Lake Huron, &c.....	1875-82.
	Harbour surveys, Maritime Provinces.....	1883-84.
	River Ottawa bridge site survey at Portage du Fort, &c.....	1885-86.
Aylmer, J. A.....	Lachine Canal enlargement, engineering staff.....	July, 1873-79.
	St. Anne Lock do.....	do 1880-81.
	Resident Engineer, new locks and canals, River Trent—construction.....	June, 1882-88.
Bailairgé, Charles....	Architect and Engineer, Public Works, Quebec and Ottawa Report on new gaol, Quebec.....	1860-63.
	Joint Architect, Ottawa Parliament Buildings.....	11th Feb., 1863.
	Lonise basins and docks, &c., Quebec.....	1863-65.
Bailairgé, Geo. Fred..	Canals, harbours, roads, Provinces of Quebec and Ontario. Surveys.—Piers below Quebec, River l'Assomption, &c....	1876-76.
	Resident Engineer, Junction and Williamsburgh Canals....	22nd Sept., 1884.
	Chambly and Beauharnois Canals, surveys and claims....	1846-1853.
	Saguenay, Metapedia, Gaspé and Temiscouata Roads, &c....	1853-1856.
	Prepared Second General Report on Public Works.....	1849-1864.
	Uornwall, Beauharnois Canal viers, &c.....	1858 to 1866.
	Charnel sounded, River St. Lawrence, between Quebec and Montreal.....	1st July, 1867.
	Baie Verte Canal, proposed route and design.....	1856-1870.
	Location and design of lock, Lakes Muskoka and Rousseau	1868-1869.
	Assistant Chief Engineer Public Works, Canada.....	Aug., 1870-73.
	Proposed Cedars Canal and River St. Lawrence survey....	June, July, 1866.
	Fort Frances Lock, Rainy Lake and Survey Harbour works, Quebec.....	5th July, 1871-79.
	Superintending Engineer Canals, Province of Quebec.....	1872-73, 1875-76.
	Deputy Minister Public Works, Canada.....	1875-76.
	Prepared Third General Report on Public Works.....	12nd June, 1877-79.
	Member of Mechanics Institute of Civ. Eng., England.....	4th Oct., 1879-83.
Baird, H. H.....	Projected Murray Canal, Lake Ontario.....	1867-82.
	Report on Beauharnois Canal project.....	1831.
	do on River Trent navigation project.....	8 13.
	Locks 134 by 33 feet; 5 feet water on sills. Work commenced 1837, and completed chiefly in 1844	1835.
	do on Welland Canal enlargement.....	1835-36.
		1837.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment.
	Work commenced 30th November, 1824. Canal first opened 30th November, 1829. Original wooden locks 110 by 22 feet, with 7½ feet of water on sills. Died, Aug. 1849, at Brattleboro, Vt...	
Barclay, E. J.....	Reports on Roads and Bridges, Eastern Townships, P.Q. ....	1846-47-48.
Barrett, Alfred.....	Engineering Staff, St. Peter's Canal, Cape Breton.....	1872.
	Report on inland navigation between Lakes St. Francis and Ontario, also on Rapide Plat Canal project.....	1830.
	Grand River navigation—Report.....	7th Oct., 1843.
	Lachine Canal, 1st enlargement, and St. Ours lock and dam, &c.....	1841.
	Surveys River St. Charles and bridges, River Ottawa, at Vaudreuil, &c. Died, 18th July, 1849, at Montreal.....	1843-48.
Bayfield, Admiral Hy. W., R.N.	In charge of the Admiralty Survey of the River and Gulf of St. Lawrence .....	1817-60.
	Made reports respecting the deepening of Lake St. Peter .....	1831-35-46.
Beaudry, J. A. U.....	Engineering Staff, Public Works, harbour surveys, P. Q....	1893.
Belanger, Ernest.....	Assistant Engineer, harbour surveys, P. Q. ....	1844-87.
Belcher, A. J. ....	Assistant Engineer, New Canal Works, River Trent. ....	1882-88.
Belcher, Thos. Deaves.	Superintending Engineer, River Trent, canals, locks, slides, dams and booms, from Trenton, Lake Ontario, up to Lake Scugog .....	July, 1873, to 1884.
Bell, Andrew.....	New Carillon Canal on north side, also new slide on south side of the River Ottawa, and dam across the River Ottawa, Resident Engineer .....	June, 1870, to Nov., 1885.
	Employed by various parties, Arnprior, &c.....	1885 to 1889.
Bell, Capt.....	Superintendent dredging ship channel, Lake St. Peter. ....	1852-56.
	Died fall of 1858.	
Bellingham, A.....	Assistant Resident Engineer, Lachine Canal, third enlargement, upper division. ....	1873 to 1878.
	Left service 1st October, 1878.	
Bender, E. P.....	Engineering Staff, Public Works, harbours, Province of Quebec, &c.....	1880 to 1887.
Bennett, William. ....	Res. Eng. Esquimaux Graving Dock, Vancouver Island, British Columbia.....	1st Sept, 1882, to Jan., 1888.
Berlinguet, Thos.....	First employed on survey Princess Louise Docks at Quebec. Survey, Harbour of Three Rivers, &c., P.Q. ....	1875-76.
	Assistant, Hydrographic survey, Pte. aux Trembles to Cap Charles .....	1881-82.
	Resident Engineer, River St. Maurice, and Engineer Harbour Commissioners, Three Rivers, &c. ....	July, 1882.
	Resident Engineer, lock and dam, River Yamaska, and various works at Sorel, River St. Francis, and River Nicolet.....	1894-88.
Bertrand, Joseph Tétu	Engineering Staff, Public Works, Ottawa and harbour surveys .....	1888.
Bertrand, L. N.....	Engineering Staff, Public Works, Surveys, Quebec and Ontario.....	1884-88.
Bolton, Major D., R.E.	Description of dam at Long Island, on the Rideau Canal, built in 1836.....	1884.
Boswell, St. G.....	Engineering Staff, Graving Dock at Lévis, and Princess Louise Basins at, Quebec.....	1839.
Boulay Philéas.....	Engineering Staff, Canals, &c.....	1876-88.
	Assistant, Oudars' Canal Survey.....	15 March, 1870-71.
	At headquarters, Department Railways and Canals, &c.....	1872-73, 1875-76.
Boyd, John Edward...	Resident Engineer, European and North American Railway, by Government of New Brunswick .....	1876-88.
		1886-80.

## ENGINEERS Employed on Public Works, Canada.—Continued.

Engineers.	Works.	Dates of Employment.
	Chief Engineer and General Superintendent of E. and N.A. Railway .....	Dec., 1860-67.
	Assistant Engineer, Department Public Works, Ottawa....	1st Sept., 1867-71.
	Chief Engineer of Government Railways, Prince Edward Island. ....	10th May, 1871-75.
	Resident Engineer, North Shore Railway, by Government of Quebec.....	1876 and 1879.
	Engineer in charge of works, Maritime Provinces .....	May, 1880, to June, 1881.
	Engineering Staff at Headquarters, Ottawa.....	1881-83.
	Resident Engineer, Princess Louise Basin, Quebec, and graving dock at Levis, for Public Works Department... Died at Ottawa, Nov., 1887.	Sept., 1883, to Nov., 1887.
Green, Thomas.....	Engineering Staff, Public Works, harbours, &c., Province of Quebec. ....	1882-88.
Brophy, G. Patrick.....	Engineering Staff, Public Works .....	July, 1867.
	Assistant Superintendent, Ottawa slides and booms .....	6th July, 1873.
	Superintendent do do .....	22nd July, 1875-88.
	J. B. Brophy acted as Superintendent 1st July 1879, to 1880.	
Brophy, John Byrne....	Assistant Superintending Engineer, Ottawa slides and booms. ....	1st Jan., 1876.
	Superintending Engineer, Ottawa slides and booms. ....	1st July, 1879.
	Resident Engineer on O. A.—C. P. O. Railway Division ....	1st April, 1880.
	Divisional Engineer, Cape Breton Railway .....	23th June, 1886.
Bootherton, A. S.....	Engineering Staff, Public Works, harbour surveys, &c., below Quebec. ....	1881-82.
Brown, Edward.....	Report on back-waters, Newcastle District .....	18th Feb., 1858.
Brown, Gustavus A....	Assistant Engineer, Public Works, Maritime Provinces .....	1st July, 1872-88.
Barnett, Thomas .....	British Engineer, mae survey and plans of Lachine Canal. Canal commenced, 17th July, 1821. do opened in August, 1824. Depth, $4\frac{1}{2}$ water on lock sills. Stone Locks, 100 by 20 feet.	Spring of 1820.
Barwell .....	Survey of Goderich Harbour. ....	1827.
By, Lieut.-Col., R. E....	Superintending Engineer of Rideau Canal—Ottawa to Kingston. ....	Sept., 1826.
	Canal commenced, 21st Sept., 1826. do completed, 29th May, 1832. do 126 $\frac{1}{2}$ miles long, with 47 locks, of 134 by 33 feet and $4\frac{1}{2}$ feet water on sills.	
Carroll, Cyrus.....	Engineering Staff, Public Works, Harbours, Ontario.....	1884-86.
Chaloner, Charles E....	Public Works, surveys, Manitoba and North-West Terri- tories, &c .....	1882-83.
	Assistant of R. Steckel, Geodetic survey, River St. Law- rence between Montreal and Quebec, and River Richelieu, &c.....	1884-88.
Champion, A. J.....	Engineering Staff, Public Works, Maritime Provinces. ....	888.
Charbonneau, Maxime..	Engineering Staff, Public Works, Manitoba and North-West Territories, River North Saskatchewan. ....	1881-86.
	Died February, 1887.	
Cass, W. R.....	Cedars Canal route proposed on north side of River St Lawrence. Plan, profile and estimate .....	1841.
Chatwood, Henry Wa- ters King.....	Engineering Staff, Southern Division, Welland Canal En- largement. ....	February, 1883.
Clace, Simon .....	Engineering Staff, Public Works, harbours, Quebec .....	1881-87.
	Resigned 11th Aug., 1887. Elected Member of Char- levoix for House of Commons 26th Sept., 1887..	
Clark, O. ....	Engineering Staff, New Canal Works, River Trent.....	1881 to 1886.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Date of Employment.
Clarke, Thomas O.....	Ottawa River navigation to Lake Huron, survey .....	1859.
Cliff, John.....	Report on projected Ship Canal.....	2nd January, 1861
Clowes, Samuel.....	Superintendent Harbour Works, Montreal .....	1832 to 1846.
	Rideau Canal, proposed works.....	1823.
	Welland Canal do .....	1824.
	Galops, Rapide Plat, Farran's Point and Cornwall Canals, General Report and Estimates submitted.....	1826.
Cole, Capt., R. E.....	Consulting Engineer, Cornwall Canal construction.....	1833.
	Canal commenced in 1833, opened December, 1842. Completed June, 1843.	
Cole, Major P., R. E... ..	Report on causes of floods, River St. Lawrence, Montreal.....	29th June, 1841.
Conway, John .....	Engineering Staff, Lachine Canal Enlargement.....	1871-83.
	Assistant Engineer, St. Gabriel Basin, L.O. ....	1863-86.
	Engineer, Electric Light Apparatus, Lachine Canal, Montreal. ....	1866-88
Cornell, J.....	Engineering Staff Public Works, at Montreal, Lachine Canal, Enlargement .....	1843.
Coste, Louis.....	Engineering Staff Public Works, Ottawa, &c. ....	1894-88.
Crawford, William.....	Survey Beauharnois Canal, Enlargement projected .....	1872 to 1876.
	Assistant Engineer Welland Canal, Deepening to 14 feet..	1st June, 1884.
	Resident Engineer Sault Ste. Marie Canal, Canada.....	1st August, 1888
	First survey made in 1854.	August, 1887-88.
Crawley, Capt., H. O., R. E.	Reports on Baie Verte Canal project, to unite the Bay of Fundy with the Gulf of St. Lawrence .....	19th Jan., 1843, at 14th and 19th March, 1843.
Cunningham, Granville O.....	Resident Engineer, Prince Edward Island Railways, Assistant Engineer in charge of harbours, &c., Prince Edward Island, for Public Works Department .....	April, 1875 to 1877
Curran, Veysie .....	Assistant Resident Engineer, Southern Division, Welland Canal Enlargement .....	November, 1873.
D'Amours, J. W .....	Engineering Staff, Public Works, British Columbia, Victoria, &c. Survey mouth of Fraser River, British Columbia .....	1885.
Dawson, Simon.....	River St. Maurice, slides and booms.....	1852-57.
	Route Lake Superior to Fort Garry, survey commenced .....	1857.
	Work commenced. ....	1867.
	Col. Wolseley and troops passed. ....	1870.
	Work completed for passage of immigrants .....	1871.
Déniel, Emile.....	Grenville Canal enlargement .....	Sept. 1872, to Oct. 1890.
Denison, Lieut. W., R. E.....	Panama Canal, Central America.....	Jan., Feb., March 1888.
	Description of Rideau Canal dams, locks, &c., and of bridges across the River Ottawa .....	1839.
Dérôme, J. B.....	Piers, &c., Province of Quebec, Public Works Department .....	10th July, 1864.
Derbishire, Stewart. ...	Eng. Staff, employed on Harbours and Roads .....	1873-77.
Desbarats, G. J. ....	Carillon New Canal, slide and dam, River Ottawa .....	Aug., 1879.
	Headquarters, Ottawa, Department of Railways and Canals .....	Jan., 1888-88.
Des Brisay, L. P. W....	Engineering Staff, Public Works, Calgary, Bow River bridge .....	18th March, 1881 to 30th April 1888.
Desjardins, O.....	On survey ship channel between St. Roch and Ile aux Coudres .....	1881.
Dickinson, John .....	Appointed commissioner to enquire into cause of floods between Montreal and Quebec.....	4th October, 1881
Dickinson, Jos. E., M. A., Trinity College, Dublin.....	Assistant Engineer, Northern Division Welland Canal, 2nd enlargement .....	15th July, 1876, 30th Dec., 1876.
	Died in Europe.	

## ENGINEERS employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment.
Dart, J. E.....	Engineering Staff, canals, &c., P. Q..... St. Zotique road dyke, protection wall on north shore of Lake St. Francis..... Left service.....	1884-86. 1884-85. 1st Jan., 1886. July, 1872-88. 1826.
Douglas, R. O.....	Engineering Staff, Ottawa—canals, &c.....	
Drummond —, R. E.....	superintending Engineer, first Suspension bridge, Ottawa..	
Dubergier, O. O.....	Assistant Engineer, Public Works, harbour surveys, north shore River St. Lawrence, below Quebec.....	1881.
Ducharmeau, A.....	Engineering Staff, Lachine Canal enlargement, &c., Montreal Division..... Superintending Engineer's office, Montreal.....	July, 1872-81. Nov., 1881-88.
Duvernet, Lieut.-Col., Henry, R. E. of Royal Staff Corps.....	Report and estimates, proposed canal and lock at Ste. Anne, north side of River Ottawa, instead of old wooden lock between Ile Perrot and Vaudreuil, built in 1816 by the St. Andrew's Steam Forwarding Company, for steamers of 20 horse power.....	13th Dec., 1831. 14th March, 1882.
Eads, Jos. B., U. S.....	Report on Toronto Harbour proposed improvements..... Died, 8th March, 1887.	
Fafard, Eugène.....	Engineering Staff, Public Works, harbour surveys, P. Q.....	1888.
Fafard, F. X.....	do do.....	1881.
Fage, J. M.....	Engineering Staff, Public Works, harbours, Ontario.....	Sept. 1874-80.
Fanchaw, Col., R. E.....	Commissioner Rideau Canal.....	1828.
Farjana, F. O.....	Proposed Cedars Canal survey on north shore of River St. Lawrence.....	1872-73.
	House Harbour, Magdalen Islands, Gulf of St. Lawrence ...	1874-76.
	Harbours, Ontario, &c.....	1875-81.
	Died, May, 1882.	
Fellows, Charles L....	Served on examination of part of Dawson Route..... Engineering Staff, surveys, &c., Welland Canal, 2nd Enlargement..... Assistant Engineer, North Division Welland Canal, 2nd Enlargement.....	1869. 1870-76. 1st July, 1876 to 30th May, 1882.
Fleming, —.....	Recommends dredging River Richelieu so as to avoid building lock and dam at St. Ours..... Dredging of River Richelieu commenced.....	1829. 1830-31.
Forsyth, Robert.....	Consulting Engineer, Williamsburgh and Cornwall Canals Superintending Engineer, Montreal Harbour and Ship Channel improvement, River St. Lawrence, Montreal to Quebec.....	1834. 1855 to 1864.
Foulis, Robert.....	Report on River St. John from Fredericton to Grand Falls, New Brunswick.....	21st Aug., 1826.
French, J. Bernard....	Welland Canal Staff, North Division, 2nd Enlargement....	1876.
Frome, Lt. E. G., R. E.	Description of Rideau Canal and Chaudière Bridge.....	28th Feb., 1837.
Gamble, F. C.....	Assistant Engineer, Public Works, British Columbia..... do in charge of Public Works, British Columbia.....	1st May, 1881-86. 1st Jan., 1886-88.
	Resident Engineer and Agent, Public Works Department, British Columbia.....	1st Jan., 1888-89.
Gamble, S.....	Report on projected Caughnawaga Canal between River St. Lawrence and Lake Champlain.....	1855-56.
Garon, L.....	Assistant Engineer, Public Works, Harbour Surveys, Ontario.....	1880-81.
Gaudet, J. F.....	Engineering Staff on Survey Dawson Route from Thunder Bay, Lake Superior to Fort Garry, Manitoba, 461 miles	1857-59.
Gauvreau, Pierre.....	Engineering and Architect Staff, Province of Quebec, Public Works Department..... Subsequently employed by Provincial Government of Quebec until his decease on the 16th May, 1884, at the age of 71.	1850-67.

ENGINEERS employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment.
Geddes, —.....	Consulting Engineer with Capt. Cole, R. E., and Fleming, Williamsburgh and Cornwall Canals .....	1834.
Gleborne, F. N., M.E., Electrician, F.R.S.O., &c., &c.....	Superintendent Government Telegraphs, Nova Scotia..... Laid Prince Edward Island Cable .....	1848-51. 1852.
	Superintendent Government Telegraph and Signal Service, Canada .....	1st May, 1879-88
	Laid Gulf of St. Lawrence and Bay of Fundy Cables ....	1880.
	do British Columbia Cables .....	1881-84.
Gouin, W. F. ....	Engineering Staff, Public Works, Ontario, Manitoba and North-West Territories .....	1884-88.
Gourlay, Robert.....	His views respecting Cornwall and Welland proposed canals, and improvement of the River St. Lawrence. "Statistical Account of Canada," with map, published in London, England .....	1819. 1822.
Gray, Henry A. ....	Assistant Engineer, Intercolonial Railway .....	1867-74.
	do Public Works Department.....	1878 to 1890.
	Engineer in Charge of Harbours, Western Ontario.....	1881 to 1886.
	Chief Assistant Engineer, Public Works at Ottawa .....	1886 to 1899.
	Resident Superintending Engineer, Public Works, Maritime Provinces .....	August, 1888-89.
Greene, D. M.—U.S....	Reports on Sawdust in Navigable Streams.....	10 Mar., 1871.
Greenwood, H. ....	Engineering Staff, New Canal Works, River Trent.....	1883 to 1887.
Grondin, A. L. ....	Engineering Staff Public Works, Harbour Surveys, north shore River St. Lawrence .....	1883.
Guerin, Thomas .....	Engineering Staff, Headquarters, Public Works..... Previously Professor Civil Engineering at McGill University, Montreal. Assistant Engineer of G. F. Baillairgé on Baie Verte Canal Survey.....	1st Sept., 1864-69. 1870 to 1873.
	Hydraulic Surveys, Montreal, Ottawa, Chaudière Falls and Manitoba, &c.....	1873-87.
	Died suddenly in his office at Ottawa, 7th May, 1887.	
Gzowski, Lt.-Col. C. S.	Superintending Engineer, roads, harbours, &c., Western Ontario.....	1842 to 1848.
	Engineer of Harbour Works at Montreal .....	1850 to 1853.
	Consulting Engineer, Ship Channel Improvement between Montreal and Quebec .....	1850 to 1853.
	Canal Commission, projected Enlargement, &c.....	16th Nov., 1870 to 1871.
	International Bridge across the Niagara .....	1871 to 1872.
	Report on Proposed Enlargement Welland Canal .....	14th Feb., 1873.
	do do Scheme Baie Verte Canal .....	18th do 1873.
Hale, W. D. ....	Specification for extension of piers at Port Stanley, Lake Erie .....	2nd Nov., 1849.
Hall, Francis Benj. ....	Welland Canal route, with Messrs Olowes and Roberts..... Shubenacadie Canal, commenced 1827. Completed 1862... Superintendent construction, Burlington Bay Canal..... Report on Baie Verte Canal project. ....	1824. 1825. 1825 to 1832. 1825.
	Roads, Ontario .....	July, 1845.
	Welland Canal commenced 30th November, 1824 Opened 30th November, 1829, for vessels drawing 7½ feet water, and of 21½ feet, beam. Wooden locks, 110 × 22.	
Hamel, Félix M. ....	Engineering Staff, Public Works, Harbours, &c.....	1st March, 1867, to 1st Sept., 1868.
	do Intercolonial Railway, until .....	1st Sept., 1870.
	do Public Works, at Headquarters, until....	10th June, 1871.
	do Canadian Pacific Railway do ....	January, 1874.
	do Culbute Canal, River Ottawa do ....	August, 1874.



## ENGINEERS employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment
Hamel, Félix M. ....	Engineering Staff, Lock, &c., River aux Lièvres, Ottawa district, until .....	1897-88.
Harrington, Thos. W. ...	Engineering Staff, St. Lawrence and Ottawa Canals.....	19th July, 1870.
	Assistant Engineer, Lachine, Chambly, Outbute Canals....	1st October, 1870.
	Assistant Superintending Engineer, Canals, Province of Quebec.....	1st May, 1875-87.
	Died 26th October, 1897.	
Harris, Major.—R. E. ...	Rideau Canal, Report and Estimate jointly made with Col. J. C. Smith and Sir George Hoste.	
	Locks to be 108 × 20 × 5 feet, water on sills .....	1825.
	(Afterwards built 133 × 33 × 5 on sills.)	
	Work commenced in 1826, and completed 29th May, 1832, under Col. By, R.E.	
Haycock, Sam. H. ....	Engineering Staff, Galops Canal Enlargement.....	August, 1879.
Hackman, J. W. ....	Engineering Staff, Public Works, river improvements.....	1886.
Hegan, J. B. ....	Assistant Engineer, Intercolonial Railway .....	1869 to 1873.
	Assistant Engineer, Public Works, Maritime Provinces ....	1873 to 1880. 1882 to Sept., 1883.
	Engineer in charge of Public Works do .....	Sept., 1883, to July, 1888.
Heary, George W. ...	Lachine Canal Enlargement, Lachine Division .....	July, 1880-85.
	Left service July, 1885, for C. P. R.	
Heashaw, George H. ...	Resident Engineer, new lock and channel Ste. Anne de Bellevue, River Ottawa, north side . . . . .	October, 1873-83.
	Paper on floods of River St. Lawrence.....	1884.
	Paper on Frozil tie, its nature and prevention, to the Canadian Society of Civil Engineers. ....	1887.
Heyland, A. R. ....	Engineering Staff, Public Works, British Columbia.....	1st October, 1895, to 19 Nov., 1898.
Hill, A. E. ....	Engineering Staff, Public Works, British Columbia.....	1st Oct., 1887-88.
Hopkins, W. R. ....	Resident Engineer, Chamby Canal.....	October, 1831.
	Chambly Canal commenced.	
	Locks 118 to 125 × 23½, with 7 feet water on sills.	
	Chambly Canal opened to navigation.....	17 Nov., 1843.
	St. Ours Lock and Dam proposed .....	1835.
Hoste, Lieut.-Col. Sir Geo., R. E. ....	Rideau Canal, Report and Estimates. Locks to be 108 × 20 and 5 feet depth on sills. (Altered to 133 × 33 × 5.)...	1825.
	Work commenced 1826, and completed 29th May, 1832, under Col. By, R.E.	
Hounslow, T. ; F. W., R.E.D. ....	Description of method of raising buildings by screws in Canada and the United States .....	18th Sept., 1841.
James, O. ....	On Southern division, Welland Canal, 2nd Enlargement....	1875.
Jarvis, J. B. ....	Report on projected Caughnawaga Canal from River St. Lawrence to Lake Champlain, or from Caughnawaga to St. John, recommending its construction, as proposed by J. B. Mills, 19th February, 1848 .....	13th Feb., 1855.
Jebb, Capt. R. E. ....	Routes for Rideau Canal proposed between Ottawa and Kingston .....	1815 to 1817.
Joelin, H. K. ....	Lachine Canal, 2nd Enlargement, Resident Engineer, Montreal Division. ....	July, 1872-82.
	Left service 1st May, 1882. Died in November, 1887.	
Keefer, George. ....	Resident Engineer, first construction of lower division of Cornwall Canal. ....	1834-43.
	Resident Engineer in charge of Chambly Canal, completion and improvements .....	1844-47.
Keefer, Samuel. ....	Chief Engineer, Public Works, Ontario and Quebec.....	17th Aug., 1841-53.
	do Superintending Engineer, Grand Trunk Railway.....	1853 to 1859.
	Inspector of Railways.....	1857-64.
	Assistant Commissioner of Public Works.....	6th May, 1859-64.
	Canal Commission.....	16th Nov., 1870-71.

## ENGINEERS employed on Public Works, Canada.—Continued.

Engineers.	Works.	Dates of Employment.
	Report on proposed Welland Canal Enlargement.....	14th Feb., 1873.
	do do Baie Verte Canal route, &c.....	18th Feb., 1873.
	President Canadian Society of Civil Engineers.....	1888.
Keefer, Thomas O.....	Assistant Engineer, Welland Canal.....	1842-45.
	River Ottawa slides and booms.....	1846 to 1849.
	River St. Lawrence improvements.....	1849 to 1851.
	Survey and design for Victoria Bridge.....	1851-51.
	Consulting Engineer, Ship Channel and Montreal Harbour.	1853 to 1856.
	Hamilton Water Works.....	1857-59.
	Georgian Bay Canal project, report.....	1863.
	Chief Executive Committee of Canada at Paris Exhibition.	1878.
	Montreal Water Works, &c.....	1878 to 1887.
	First President Canadian Society of Civil Engineers.....	24th June, 1887.
	President American Society of Civil Engineers.....	1888.
	Montreal Flood Commission.....	1886-88.
Keely, D. H.....	Assistant Superintendent Government Telegraph Lines of Canada.....	1st March, 1882-88.
Keller, Capt. L.....	Engineering Staff, Public Works, Hydrographic survey, Pointe aux Trembles to Cap Charles, River St. Lawrence, &c.....	1882-84.
Kelly, Athol D.....	Engineering Staff, Welland Canal Enlargement, North Division.....	1875.
Kennedy, John.....	Chief Engineer, harbour improvements, Montreal, and dredging of River St. Lawrence, Montreal to Quebec...	20th April, 1875-83.
	Vice-President Canadian Society of Civil Engineers.....	24th June, 1887.
	Montreal Flood Commission.....	1886-88.
Kierkowski.....	Engineering Staff, Beauharnois Canal.....	1842 to 1845.
Killaly, Hon. H. H.....	Survey with N. H. Baird for 1st Enlargement of Welland Canal.....	1837.
	Chairman Board of Works, Ontario and Quebec.....	20th Dec., 1841.
	Specification of works at Windsor Harbour, Lake Ontario.	1st May, 1843.
	Assistant Commissioner of Public Works, Windsor Harbour, Lake Ontario.....	15th Feb., 1851.
	Special reports on Saut Ste. Marie, Goderich Harbour, Piers below Quebec, Lake St. Peter, Pointe Pelée Lighthouse, &c.....	1846 to 1862.
	Died 28th March, 1874. Aged 72.	
Killaly, H. H., jun.....	Resident Engineer, Upper Division of Lachine Canal, 2nd Enlargement.....	Feb., 1876-85.
	Cornwall Canal Enlargement, upper half.....	1st July, 1885-88.
	Rapide Plat Canal, &c., Enlargement, &c.....	Dec., 1884-88.
King, Chester Henry Waters.....	Engineering Staff, Southern Division, Welland Canal Enlargement.....	Feb., 1883.
King, William.....	Assistant Mechanical Engineer, Ottawa, &c.....	16th Dec., 1878-88.
	Public buildings and dredges.	
Kingsford, William....	Engineering Staff, Lachine Canal Survey.....	1847.
	On particular service until.....	June, 1873.
	Engineer in charge of harbour works, Ontario....	June, 1873 to 1880.
	Transferred to Department of Railways and Canals.....	1880.
Lafleur, Eugène D.....	Engineering Staff, Public Works at Ottawa.....	27th Sep., 1881.
	Assistant Engineer, Hydrographic survey, River St. Lawrence.....	July, 1883 to 1884.
	Harbour Works, Ontario, Quebec and New Brunswick.....	1884-88.
Langevin, H. Laforce.	Princess Louise Basins, Quebec, and Pointe Lévis Graving Dock.....	1884-88.
Languedoc, G. de G....	Grenville Canal Enlargement.....	May, 1879 to 1887.
Lantier, E.....	Engineering Staff, Survey proposed Cedars Canal.....	1872-73.
Larue, Adolphe.....	Survey of Lake St. Louis.....	1836.
Lefebvre, Jean.....	Engineering Staff, Metapedia Road S. Division, Assistant of G. F. Baillargé.....	1857 to 1867.



## ENGINEERS employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment.
	Appointed Engineer of Intercolonial Railway, in operation. Canal commenced by Nova Scotia Government 1854. Canal completed by Dominion Government. 5th August, 1869.	November, 1871.
McNaughton, Chas. E.	Engineering Staff, Welland Canal Enlargement, Northern Division .....	1875.
McTaggart, J.—Eng...	Examination and Report on Rideau Canal .....	1827-28.
Melhuish, Capt., R.E..	Account of demolition of Glacière Bastion, Quebec .....	1828.
	Consulting Engineer, Chambly Canal .....	1831.
Merrill, Horace .....	Superintending Engineer, Ottawa River slides and booms.	20th January, 1849, 22nd July, 1875.
	St. Maurice slides at Shawenegan and Grand Mère, first designed .....	1852.
	Carillon dam across the River Ottawa .....	June, 1879, to 1883.
	Died 22nd May, 1883.	
Merritt, Thomas .....	Engineering Staff, Welland Canal Enlargement, Northern Division .....	1875.
Michaud, C. E. ....	Assistant Engineer of G. F. Baillairgé on survey of Gaspé and Ste. Anne des Monts Road, north shore, Gulf of St. Lawrence .....	1861-62.
	Engineering Staff, Public Works, harbour works, &c. ....	1st Nov., 1864-70.
	On Pacific Railway survey, British Columbia .....	1871 to 1873.
	Resident Engineer, lock and dam, River Yamaoka. R. St. Francis and Nicolet, dredging and improvement .....	1877 to 1888.
	Resident Engineer, harbour works, south shore, River St. Lawrence .....	1888-89.
Michaud, Oléophas .....	Engineering Staff, Public Works, harbour surveys .....	June, 1873.
	do do do do .....	1884-85, 1887-88.
Millett, Herbert Alfred	Engineering Staff, Southern Division, Welland Canal Enlargement .....	August 1881.
Millidge, E. G. ....	Assistant Engineer, Public Works, Maritime Provinces .....	1872 to 1886.
	Resident Engineer, St. Peter's Canal, Cape Breton, &c. ....	1875 to 1881.
	Canal commenced by Nova Scotia Government in September, 1854, suspended 1866, resumed in 1866, and completed in 1869.	
Mills, J. B. ....	Projected Cedars Canal .....	1833.
	Oornwall and Williamsburgh Canals .....	1833-48.
	Projected Oughnawaga Canal .....	1847-48.
	Died towards 1871.	
Minnitte, R. O. ....	Basé Verte Canal, first survey for a canal of about 4 feet draught, to be fed by fresh water, through valley of Au Lac to the Missiguash Lakes and thence to River Tidnish .....	October, 1822.
Monro, Thomas .....	On Grand Trunk Railway, surveys and construction, Montreal to Kingston, and St. Lawrence Bridge survey, Montreal; also, Water Works survey and plan, Montreal .....	1850 to 1857.
	Assistant Engineer, Hamilton Water Works; Resident Engineer, Hamilton and Port Dover Railway .....	1857 to 1859.
	Public Works, Ontario, &c., Harbours of Refuge, &c. ....	February, 1860-68.
	Inspector of Railways .....	1863.
	Survey, Lake Shebandowan on the Dawson route .....	1869.
	Welland Canal Enlargement, survey and location .....	1870-71.
	Engineer in charge of Welland Canal .....	July, 1872, to 31st January, 1873.
	Resident Engineer, Northern Division, Welland Canal Enlargement .....	1873-88.
	Invited to International Congress of Navigation at Brussels. On Toronto and Georgian Bay, proposed Canal, in charge of summit level survey .....	30th April, 1885.
	Engineer of Water Works, Pit Hole City, Pennsylvania .....	1857.
	Assistant Engineer, preliminary location and construction Intercolonial Railway .....	1865.
		1868-70.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment.
Mooney, William.....	Engineering Staff, Lachine Canal Enlargement, Montreal Division ..... Yamaska Lock and dam, &c, Assistant Engineer..... Died 2nd January, 1885.	1873. 1880-84.
Motherall, G. A. ....	Chief Engineer's Staff, Headquarters, Ottawa .....	May, 1873-82.
Murdoch, William.....	Ouellingwood Breakwater, Lake Huron..... Port Arthur, River Kamistiquia, &c., Ontario, Harbour works, Resident Engineer, Public Works .....	1871. 15th Oct., 1884-88.
	Previously employed, chiefly on the Canadian Pacific, Picton and Trenton, Manitoba and South Western, North-West Central and Hudson Bay, Railways, as Resident, District or Chief Engineer .....	1871 to 1884.
Nagle, Gerald J.....	First Superintendent, Ottawa River slides and booms..... Specification, River Trent slides and booms. ....	1843 to 1846. 28th June, 1843.
Nelson, J. M.....	Floods at Montreal, Assistant Harbour Engineer.....	1884.
Nichols, Col., Commanding R. E. ....	Rideau Canal route surveyed under his orders by Captain Jebb, R.E. ....	1815.
Nish, A. G.....	Chief Engineer harbour works of Montreal, and ship channel, River St. Lawrence, from Montreal to Quebec Afterwards contractor on Government works at Esquimalt graving dock, British Columbia, &c., up to 1887..... Died 31st January, 1888.	1864 to 1875. 24th Feb., 1880-87.
Norman, Thomas E. ...	Chate Canal, north side River Ottawa .....	1853.
	Report on survey of the islands and on the water power of the Chate Rapids, River Ottawa .....	1st March, 1858.
Normand, J. B.....	River St. Maurice, slides, booms, dams, piers. .... Appointed Commissioner to report on causes of floods between Quebec and Montreal.....	1853-58. 4th Oct., 1873.
	Report on causes of floods..... Acting Superintendent, River St. Maurice, slides and booms.....	21st Feb., 1874. 1875-76.
Odium, Ed. John.....	Assistant Engineer, Welland Canal Enlargement, Southern Division.....	Nov., 1873-83.
Oldfield, Lieut.-Col. J., Commanding R. E.....	Report on experiments, blowing in gates at Quebec.....	11th, 13th July, 1840
Ostell, John .....	Architect, Surveyor and Engineer.....	1847-48.
Page, John, sen. ....	Resident Engineer, Welland Canal..... Assistant Chief Engineer, Welland Canal..... Resident Engineer, Junction and Williamsburgh Canal.... Superintending Engineer, canals below Kingston..... Chief Engineer, Public Works, Provinces of Quebec and Ontario.....	1842. Sept., 1842. 1850-51. 1852-53. 5th Nov., 1853.
	Deputy Commissioner, Public Works, Quebec and Ontario. Chief Engineer, Public Works, Canada..... Welland Canal Enlargement, survey commenced..... Reports on Enlargement of canals, Lake Erie to Montreal..	8th March, 1864. 15th March, 1864. 1870. 1872 to 1877.
	Report on proposed Baie Verte Canal..... Special and General Report on Canals, River St. Lawrence Chief Engineer of canals of Canada .....	10th Dec., 1873. 16th Feb., 1880. 1879-88.
Page, John, jun.....	Lachine Canal Enlargement, Engineering Staff..... Assistant Engineer, Cornwall Canal .....	April, 1876-79. 1880-85.
	Died 14th April, 1885.	
Papineau, L. G. ....	Engineering Staff, Public Works, at Montreal, &c..... do do Chambly Canal, &c. .... do River Richelieu survey, &c.....	1878-80. 1881-83. 1884-88.
Paischaud, Antoine....	Resident Engineer, construction of roads between Gaspé Basin and the St. Lawrence.....	1858-67.
Parent, E. H.....	Seigniorial Cadastral Office..... At headquarters and on surveys, &c..... Resident Engineer, Grenville Canal..... Superintending Engineer, Carillon, Grenville, Outbute Canals.....	1861-64. 15th Sept., 1864-71. July, 1872-78. 4th Feb., 1879.

## ENGINEERS employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment.
Pariseau, L. S.....	Superintending Engineer, Lachine, Beauharnois, Chambly Canals, St. Ours Lock and Dam, &c..... Engineering Staff, Grenville Canal Enlargement..... do River Richelieu survey.....	12th May, 1880-82. 1878 to July, 1884. 1885-88.
Pearse, B. W.....	Resident Engineer, Public Works, British Columbia.....	July, 1871 to 1881.
Perley, George E.....	Engineering Staff, Ottawa..... Kilgaton graving dock.....	2nd June, 1884-88. June, 1888.
Perley, H. F.....	Engineer Staff, Government of New Brunswick..... do do..... do Nova Scotia.....	Feb., 1848, to June, 1852. Aug., 1856, to Dec., 1860. May, 1863, to Aug., 1865.
	Engineer in charge of Government Railways, New Brunswick.....	May, 1870, to May, 1872.
	Engineer in charge of St. Peter's Canal, Cape Breton..... Superintending Engineer, Public Works, Maritime Provinces, Federal Government..... Chief Engineer, Public Works, Canada..... Chief Engineer, harbour works, Quebec, graving dock, Lévis..... Chief Engineer, ship channel, Montreal to Quebec..... Vice President, Canadian Society of Civil Engineers..... Montreal Flood Commission.....	31st Jan., 1880-88. 1st May, 1871. 25th Nov., 1880. Sept., 1883-88. 31st Dec., 1888. 24th June, 1887. 1886-88.
Perry, Capt., Geo. H....	Chate Canal, Ottawa and French River surveys..... Resident Engineer, Culbute Canal, Upper Ottawa..... Died 1888.	1853-58. Sept., 1873-87.
Phillipotts, Lieut.-Col., R. E.....	Engineer in charge of Cornwall Canal construction..... Reports on inland navigation of Canada.....	1836. 31st Dec., 1839, to 3rd Aug., 1840.
Pilkington, Woodford..	Report on proposed Enlargement of Welland Canal..... Resident Engineer, harbour works, Quebec, and graving dock, Lévis.....	1841. 1876 to 1883.
Piper, Capt., R. E.....	Commissioner, harbor works, Montreal.....	1830-32.
Pound, Nicholas.....	Engineering Staff, Public Works, harbour surveys.....	1888.
Power, S.....	Engineering Staff on Welland Canal..... Specification for construction of lock gates, Welland Canal	1842-45. Oct., 1813.
Raaslof, Col. de, Russian Engineer.....	Submarine Engineer. Examined River St. Lawrence rapids from Lake Ontario down to foot of Lake St. Louis, at Lachine, with Maillefert.....	1854.
Randall, —.....	Report on Welland Canal, in progress.....	31 May, 1830.
Ranney, G. W.....	Superintending Engineer, River Trent Canals, slides, dams and blooms, from Trenton, Lake Ontario, up to Lake Scugog, inclusive.....	4th May, 1855, to July, 1873.
Rheume, L. N.....	Engineering Staff, Lachine Canal, second Enlargement..... Rapide Plat, canal Enlargement..... Cornwall Canal.....	1st Nov., 1877-84. Dec., 1884. 1st July, 1885-88.
Richard, J. F.....	Harbour surveys, Province of Quebec.....	1881-83.
Rigney, James.....	Engineering Staff, roads, Eastern Townships, P. Q..... Assistant Engineer, River Trent Works at Bobcaygeon, &c. Died in California, 6th August, 1863.....	1842. 1843-49.
Ritchie, Thomas.....	Engineering Staff, Maritime Provinces.....	1883.
Roberts, U.S. Eng. ....	Examination of route for projected Welland Canal with Messrs. Hall and Olowes, British Engineers..... Canal commenced 30th Nov., 1824. do opened 30th do 1829. Wooden locks 110 by 22; 7½ feet water on sills.	1824.
Robertson, G. E.....	Engineering Staff, Lachine Canal, second Enlargement, Lower or Montreal Division, &c.....	Aug., 1873-85.

## ENGINEERS employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment.
Robinson, Arthur G....	Cornwall Canal Enlargement, Upper Half .....	July, 1885-88.
Rogers, R. B.....	Assistant Engineer, Lachine and Chambly Canals .....	1843-48.
	Assistant Engineer, River Trent Slides, Booms and Canals .....	1878 to 1881.
	do Midland Division, Grand Trunk Railway .....	1881 to 1882.
	do Survey Trent Valley Canal .....	1882 to 1883.
	Superintending Engineer, River Trent Slides, Booms and Locks .....	1st July, 1884-88.
Ross Joseph .....	Engineering Staff, roads, bridges, piers, harbours and river improvements, &c., Province of Quebec. ....	29th May, 1856-88.
Rosmond, Joseph A...	Report River St. Francis, Pierreville Mills .....	13th July, 1875.
	Engineering Staff, Lachine Canal Enlargement .....	June, 1876-82.
	Resident Engineer Murray Canal, Lake Ontario. ....	June, 1882, to '89.
Ross, John LeBreton...	Engineering Staff, Public Works Ontario and Quebec.....	December, 1856-76.
	Died, May, 1876.	
Rowan, James H.....	Engineering Staff Public Works, canals and railways.....	May, 1860-72.
	Subsequently District Engineer, Canadian Pacific Railway, Manitoba.	
Roy, Charles F.....	Harbours, Province of Quebec and Maritime Provinces ....	1879-80.
	Ship Channel between St. Roch and Ile-aux-Coudres .....	1881.
	Was elected for the County of Kamouraski as Member of the House of Commons, 1877-78.	
	Died 19th April, 1881	
Roy, George P.....	Engineering Staff, Public Works, harbours, Quebec. ....	1881-82, 1884.
Roy, Joseph R.....	Engineering Staff Public Works, river and harbour surveys, Quebec .....	1883-84.
Royal Staff Corps, Imperial Government...	Cascades, Split Rock, Coteau du Lac, Old Fort. Canals enlarged, locks 12 feet wide, water $3\frac{1}{2}$ feet .....	1817.
	Ordnance Canals, north side River Ottawa at Carillon, Chute à Blondeau and Grenville. Locks 108 by 20 and 130 $\frac{1}{2}$ by 32 $\frac{1}{2}$ , with 6 ft. water on sills, designed ... ..	1819.
	Completed .....	1833.
Rubidge, F. P. ....	Assistant Chief, Engineer Public Works and Architect of Canada prior to and after Confederation.....	15th Dec., 1841, to July, 1871.
	Report on proposed landing piers below Quebec .....	15th Nov., 1846.
	In charge of surveys and investigations, &c., Lake St. Peter.	1847.
	Report on River L'Assomption lock, dam and dredging ...	27th Dec., 1848.
	do bridges, &c., Province of Quebec, &c.....	29th Nov., 1848.
	Reports on buildings and other works .....	1846 to 1871.
	Superannuated.....	July, 1871.
Rubidge, Thomas S....	Engineering Staff, Williamsburgh Canal, construction ....	1844
	Superintending Engineer, deepening Galops Rapids, work commenced 1876 and completed 1881.....	1875 to 1882.
	Superintending Engineer, Murray Canal, between Bay of Quinté and Presqu'île Bay, north shore Lake Ontario...	1881 to 1886.
	Superintending Engineer, Urleigh Canal, Buckhorn Canal, Fenelon Falls Canal, &c., on the River Trent, works commenced 1882, completed 1888.....	1881 to 1888.
	Superintending Engineer, Williamsburgh Canals. Enlargement, &c .....	1880.
	Superintending Engineer, Cornwall Canal Enlargement, &c Work commenced 1876 on lower half from Cornwall upwards	1876-1888.
Russell, Lindsay A.....	Engineering Staff, Public Works. Survey Dawson Route, Fort William on River Kaministiquia near Thunder Bay, Lake Superior, to Fort Garry (Winnipeg), Manitoba.....	1857-1859.
Russell, William.....	Superintending Engineer, roads and bridges along north shore Baie des Chaleurs from Cross Point to Gaspé Basin.....	1841-1847.
	Rimouski bridge, &c. ....	1849.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment.
Scott, David.....	Assistant Engineer, Ottawa River slides and booms.....	1st Oct., 1854-89.
Scott, W. L.....	Assistant Engineer, Montreal Harbour Commissioners.....	19th May, 1875.
Secord, William F.....	Engineering Staff, S. Division, Welland Canal Enlargement.....	Oct., 1872.
Shanly, Frank.....	Formerly City Engineer of Toronto. Appointed Chief Engineer, Intercolonial Railway..... Died 13th Sept., 1882.	23rd June, 1880.
Shanly, Robert.....	Ottawa Canal survey to Lake Huron,.....	1857-58.
Shanly, Walter.....	Superintending Engineer, Beauharnois Canal construction. Proposed Ship Canals, River Ottawa, Montreal to Lake Huron.....	1842-48. 1857-58.
	Inspector of Railways, and Engineer on various works..... Elected Member of the House of Commons, 1863-72, July, 1885-89.	29th Oct., 1864-88.
Shaw, W. M.....	Specifications, &c., Hamilton and Port Dover Road, London and Brantford Brantford and Woodstock.....	1842-44.
Simmons, Lieut J. A., Royal Engineer.....	Report of an experiment made at Quebec, 13th July, 1840, to destroy a barrier gate by gunpowder.....	17th July, 1840.
Sims, A. H.....	Reports on roads, &c., District of Gaspé.....	1847-48.
Simpeon, Frank.....	Engineering Staff, Welland Canal, N. Division.....	1876.
Sippell, John G.....	Superintending Engineer, canals, Province of Quebec..... Superintending Engineer, Lachine and Ottawa Canals Enlargement..... Died, 26th September, 1879.	July, 1853 to 1877. 1870 to 1879.
Sirols, Joseph Eustache	Engineering Staff, harbour works below Quebec and straightening of ship channel between Quebec and Ile-aux-Coudres.....	1881-83.
Slater, James Dyson...	Welland Canal, Engineering Staff..... Superintending Engineer, Rideau Canal, &c..... Resigned on 12th September, 1872. Died, 26th October, 1876.	1842-46. 10th June, 1850, to 1st Oct., 1872.
Smith, D. C.....	Superintendent of lighthouses, Ontario, &c.....	21st June, 1855.
Smith, Colonel J. C., Royal Engineer.....	Joint Report and Estimate of proposed Rideau Canal Works, together with Lieut. Col. Sir G. Hoste and Major Harris, R. E., recommending locks 108 by 20 feet with a depth of 5 feet water.....	1825.
Snow, W. B.....	Engineering Staff, Public Works, Ottawa..... Harbour surveys, Ontario, Quebec and Maritime Provinces. Previously employed chiefly on railways and other important works in England where he acted as agent to the Bishop of Durham, after which he was employed in Africa..... On various works in Canada.....	1st Aug., 1880-88. 1882 to 1887.
Soare, W. F.....	Engineering Staff, Public Works, harbours, Ontario.....	1837 to 1876. 1876 to 1880.
Spence, J. B.....	Engineering Staff, Railways and Canals, Ottawa, &c.....	1885.
Starke, David.....	Secretary Commission of Enquiry, Ottawa Parliament Buildings..... Report on supplementary survey, Baie Verte Canal..... Superintending Engineer, River Ottawa Canals..... do River Trent, New Works, completion	Oct., 1876-88. 1862-63. 27th Dec., 1872. 1st May, 1880-88. April, 1887-88.
St. George, Percival W.	On Flood Commission, Montreal.....	1886-88.
St. Laurent, Arthur...	Engineer and road surveyor, Corporation of Montreal.....	1888 and previously
Steckel, Louis Joseph, René.....	Engineering Staff, Public Works, harbour surveys, P.Q..... Assistant Engineer of G. F. Baillairgé on survey of south shore St. Lawrence, Gulf Road, Ste. Anne des Monts to Oape Rosiers and Gaspé Basin..... Engineering Staff, Public Works, Ontario and Quebec..... Survey and borings, Princess Louise Basins, Quebec..... Engineering Staff, Chief Clerk, Canada.....	1885-88. Jan., 1861. April, 1863-74. 1878-76. 1st July, 1880.



ENGINEERS employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment.
	Hydrographic survey and Geodetic Levels, Rivers St. Lawrence and Richelieu.....	July, 1881-88.
	Hydrographic survey, Pointe aux Trembles to Cap à la Roch, River St. Lawrence.....	1881, 82, 83.
Stevenson, Alexander.	Survey with André Trudeau for projected canal between Lakes St. Francis and St. Louis.....	1830-31.
	Report on projected Beauharnois Canal by A. Stevenson and N. H. Baird.....	1835.
	Adopted on recommendation of Samuel Keefer in his Report, 17th February, 1842.	
Stewart, James.....	Engineering Staff, Public Works, &c., on various works....	1843 to 1858.
	Map of ice shoves at Montreal, St. Ours Lock, Beauharnois Canal.....	1843-44-45.
	Road proposed from Malbale to Ha! Ha! Bay, Saguenay....	1847.
	Survey and plans, proposed piers below Quebec.....	1846-47.
	Beauharnois and Lachine Canal surveys and new works....	1847-54.
	On Grand Trunk Railway.....	1854-55-56.
	Ottawa and Lake Huron proposed ship canal survey.....	1857-58.
	First General Report on Public Works up to 1849.	
Stoker, George.....	Assistant Engineer, Welland Canal.....	1864.
Sullivan, J. H.....	Engineering Staff, Public Works, improvement of rivers, &c.....	1880-87.
	Resident Engineer, deepening feeder, Lake St. Francis to River St. Louis.....	1883-85.
	River Assiniboine, improvement.....	1886.
Summerville, Peter....	Assistant Engineer, Public Works, surveys Victoria Harbour and Fraser River, British Columbia.....	1st August, 1883, to 6th July, 1887.
Sutcliffe, John.....	Engineering Staff, Lachine Canal Enlargement.....	15th July, 1872-81.
	do Ste. Anne Canal.....	July, 1881-86.
	St. Gabriel Basins, Lachine Canal.....	Aug., 1883-86.
	Left service, May, 1886.	
Swift, W. H. (from Boston, U. S.).....	Consulting Engineer, Oaughnawaga Canal, recommends route proposed by J. B. Mills, 19th February, 1849.....	6th June, 1855.
Symes, H. R.....	Superintending Engineer, River St. Maurice, slides and booms, &c.....	24th Feb, 1858, to 8th Oct., 1875.
	Died 8th October, 1875.	
Taché, Joseph Charles	Engineering Staff at Headquarters.....	29th Jan., 1872.
	Chief Draughtsman.....	1st July, 1883.
	Harbour works, &c., below Quebec, surveys and construction.....	1882 to 1888.
Tait, Charles Maitland	Employed on survey of Beauharnois Canal.....	1842.
Tait, T. M.....	Engineer of harbour works, Montreal.....	1845 to 1848.
Telford, Thomas.....	Report on projected Bale Verte Canal between Bay of Fundy and Gulf of St. Lawrence.....	1826.
Thom, G., Brevet Brigadier General, U. S. A.	Report on sawdust obstruction in navigable rivers.....	27th Aug., 1872.
Thompson, David.....	Astronomer and Surveyor, engaged in surveying and defining boundary line, for Great Britain, between Canada and the United States.....	1816 to 1827.
	On the River St. Lawrence.....	1817.
	Survey of Lake of the Woods.....	1825.
	Survey of Lake St. Francis, &c.....	1832-34.
	Survey of canal route, Lake Huron to Ottawa River.....	1837.
	Survey of Lake St. Peter Channel and estimate of proposed dredging for ship channel.....	1841.
Thompson, E. W.....	Assistant Engineer, Carillon Canal, new locks and dam....	July, 1872.
Thompson, H. B.....	Lachine Canal Enlargement.....	Dec., 1872.
	Assistant Resident Engineer, Oulbute Canal, Upper Ottawa	Sept., 1873.
Thompson, H. G.....	Reports on surveys and maps, with soundings of River St. Lawrence above Lake St. Louis.....	Sept & Dec, 1836-43

## ENGINEERS employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment.
Thompson, W. G. Mc-Neill, M. Inst., C. E..	Resident Engineer, Southern Division, Welland Canal Enlargement..... Entered the service of the Dominion Government in April, 1868, as Division Engineer on surveys and location of the Intercolonial Railway, and served in Nova Scotia, New Brunswick and Quebec Provinces until the spring of 1872. In charge of the survey of Lake St. Louis. .... Adolphe Larue, P.L.S., surveyed Lake St. Louis, 1868.	1872-88. Spring, 1872.
Tibbett, Hiram.....	Description of a projected route for the Welland Canal.....	1823.
Tomlinson, Joseph ....	Engineering Staff, Public Works, Canada. .... Superintending Engineer, lighthouses, Canada..... Inspector of bridges on railways, &c. ....	1st Jan., 1870. 8th May, 1871-80. 9th Feb., 1880-83.
Townsend, T. B. ....	Engineering Staff of Chief Engineer, Public Works, Ottawa..... Contractor for lock gates, Welland Canal Enlargement.....	Sept., 1872-80. 17th July, 1880.
Tremblay, A. J. ....	Engineering Staff, harbour surveys below Quebec.....	1888.
Trudeau, André.....	Survey with Alex Stevenson in connection with improvements of water communication between Lakes St. Francis and St. Louis. ....	1830-31. July, 1875-80.
Trudeau, Louis E. ....	Engineering Staff, harbour surveys, &c. .... do canals, &c., Province of Quebec.....	1880-83.
Trudeau, Toussaint....	Appointed Secretary of Public Works, Ontario and Quebec Chief Engineer, Public Works ..... Assistant Commissioner, Public Works, Ontario and Quebec Deputy Minister Public Works, Canada. .... do Railways and Canals, Canada.....	13th Dec., 1859-64. 8th March, 1864. 15th do 1864. May, 1868-79. 22nd Sept., 1879-88
Trutch, Hon. J. W., O. M. G. ....	In charge of Public Works, British Columbia..... Previously Lieut.-Governor of British Columbia.	1881 to Jan., 1888.
Tully, Kivas.....	Engineer, Toronto Harbour Commissioners. .... Proposed Georgian Bay Canal, Lake Ontario to Lake Huron	1853-88. 1846-51.
Valiquette, N.....	Engineering Staff, Public Works, Ottawa. ....	May, 1880-88.
Vaughan, Captain.....	Superintendent of dredging, new straight channel, Lake St. Peter..... In charge of Lighthouse at Belle-Ile..... Died at Quebec, 9th Dec., 1869	1844-46. 1855-61. 9th Dec., 1869.
Walton, D. S.....	Engineering Staff, Lachine Canal Enlargement, St. Ours Lock and dam, Chambly Canal, roads, bridges, &c.. Hull to Grenville, Bytown to l'Original, &c. ....	1843-49. July 1882-88. Aug., 1888.
Wells, Alexander W...	Engineering Staff Survey, proposed Dawson Route from Fort William on the River Kamini-tiquia, Thunder Bay Lake Superior, to Fort Garry or Winnipeg, Manitoba.	1857 to 1859.
Wells, Arthur. ....	Engineering Staff, Public Works, Ontario and Quebec, roads, Eastern Townships, and Lachine Canal Enlargement, &c. ....	1846.
West, James.....	Specification, bridge across westerly channel of the River Rideau, near its mouth ..... Proposed Georgian Bay, Lake Huron and Ottawa Canal....	5th July, 1845. 23rd Feb., 1856.
Westmacott, Lieut. S., R. E. ....	Report on causes of floods at Montreal....	29th June, 1841.
White, Lieut. H. A., R. E. ....	Report on experiment made as Quebec to destroy Sally Port gates with gunpowder....	11th July, 1840.
Williams, J. B.....	Engineering Staff, Public Works, River Saskatchewan Improvement, &c., N.W.T.....	1885-87.
Wise, Frederick Ashford Milbank. ....	Engineering Staff, Survey of route for proposed Saint Ste. Marie Canal, under S. Keefer, Chief Engineer of Public Works, Canada .....	1852.

ENGINEERS employed on Public Works, Canada—*Concluded.*

Engineers.	Works.	Dates of Employment.
	Engineering Staff, Public Works surveys, harbours, Ontario	1890-91.
	Superintending Engineer, Rideau Canal, Ottawa to River Gananoque, near Kingston, Ontario.....	1st Oct., 1872-83.
	Report on Tay Canal survey. Old Canal opened 1834, from town of Perth to Rideau Canal.	
Wells, Major Alex. Jos.	Superintending Engineer, Kempt Road, from St. Octave de Métié, near the River St. Lawrence, to Cross Point, Baie des Chaleurs .....	1830-32.
Wright, Benjamin. ....	Projected Welland Canal Enlargement .....	1833.
	do Williamsburgh Canals.....	1833.
	Consulting Engineer, Cornwall Canal .....	1833.
Wright, G. B. ....	Fraser River Improvements, British Columbia, report.....	1875-80.
Yule, Capt. P., R.E....	Plans, Canal and lock proposed at Ste. Anne, south side River Ottawa, instead of old lock, built 1816, in Vaudreuil channel between Ile Perrot and Vaudreuil, of wood.....	1835.
	New stone lock, north side of river, 190 by 45 feet, with 6 feet water on sills, built 1840-43.	
	Enlarged stone lock 200 × 45 with 9 feet water on sills and a new channel with crib work and embankment on each side, in the river below the lock, commenced in 1873 and completed towards 1883.	

N.B.—See remarks on title page respecting Canal Superintendents and the most important works on which Engineers have reported.—G. F. B.





# ANNUAL REPORT

OF THE

## MINISTER OF PUBLIC WORKS

FOR THE FISCAL YEAR 1898-99

ON THE WORKS UNDER HIS CONTROL.

PRINTED IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER  
SECTION 20, OF THE REVISED STATUTES OF CANADA.

PRINTED BY ORDER OF PARLIAMENT.



OTTAWA: PRINTED BY BROWN CHAMBERLAIN, PRINTER TO THE QUEEN'S MAJESTY.

1899.



CANADA. *Repr. of Pub. Works*

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ANNUAL REPORT

OF THE

MINISTER OF PUBLIC WORKS

FOR THE FISCAL YEAR 1888-89,

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SUBMITTED IN ACCORDANCE WITH THE PROVISIONS OF CHAPTER THIRTY-SIX  
SECTION 37, OF THE REVISED STATUTES OF CANADA.

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*PRINTED BY ORDER OF PARLIAMENT.*

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OTTAWA :

PRINTED BY BROWN CHAMBERLIN, PRINTER TO THE QUEEN'S MOST  
EXCELLENT MAJESTY.

1890.



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CANADA.

—  
REPORT

OF THE

MINISTER OF PUBLIC WORKS

FOR THE

FISCAL YEAR ENDED 30<sup>TH</sup> JUNE 1889.

---



*To His Excellency the Right Honourable Sir Frederick Arthur Stanley, Baron Stanley of Preston, in the County of Lancaster, in the Peerage of Great Britain; Knight Grand Cross of the Most Honourable Order of the Bath; Governor General of Canada, and Vice Admiral of the same, &c.*

**MAY IT PLEASE YOUR EXCELLENCY :**

In compliance with the requirements of Chapter 36, Section 37, of the Revised Statutes of Canada, I have the honour to submit the Annual Report of the Department of Public Works for the fiscal year ended 30th June, 1889.

The Report contains a statement of the general expenditure of the Department, amounting to \$3,517,297.66, the details of which will be found in Appendix 1, pages 5 to 21, followed by Appendices giving the Annual Reports of the Chief Architect, Chief Engineer, Chief Mechanical Engineer, and other officers of the Department, as well as statements containing information pertaining to the Department.

The works under the control of this Department are:—

- PUBLIC BUILDINGS, their construction and maintenance.
- HARBOURS AND PIERS, their improvement and construction.
- WORKS ON NAVIGABLE RIVERS.
- DREDGING AND DREDGE VESSELS.
- ROADS AND BRIDGES.
- SLIDES AND BOOMS.
- TELEGRAPHS.

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## DESCRIPTION OF WORK DONE

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The following is a description of the work done during the fiscal year on Public Buildings, Harbours, Rivers and Dredging, arranged by Provinces.

### PROVINCE OF NOVA SCOTIA.

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#### PUBLIC BUILDINGS.

In this Province the sum of \$25,435.07 was expended on construction, and repairs, of Public Buildings.

At AMHERST, an asphalt sidewalk, with stone curb was laid in front of the public building, and alterations and repairs were made, and the building fitted with incandescent electric lamps.

At ANNAPOLIS, a site for Post Office, &c., was obtained on the corner of St. George and Railway streets, and on 7th June, 1889, a contract for the construction of the building was entered into. The building will be two and a-half stories, of brick, on a stone foundation, 58 feet by 35 feet, with a one-story brick annex for an examining warehouse, 13 feet by 31 feet. The ground floor is to be for the post office and the first floor for the Customs and Inland Revenue Departments, each

department being furnished with a brick vault; and the attic is to be occupied by the caretaker.

At ANTIGONISH, hot water heating apparatus was supplied to the public building, a portion of the basement fitted up for a bonded warehouse and other work executed.

At NAPPAN, a contract has been entered into for the construction of the following buildings in connection with the experimental farm, and the work is in progress.

*Superintendent's Residence.*—A wooden two-story building, with a stone basement; the main building 42 feet by 34 feet, and a kitchen wing 24 feet by 24 feet.

*Workmen's Cottage.*—A one and one-half story wooden cottage, 27 feet by 21 feet, on a stone basement, with a summer kitchen in the rear, 10 feet by 14 feet.

*Barn and Stabling.*—These are to be of wood, and to consist of a main building 111 feet by 50 feet, 40 feet in height, on a stone basement 12 feet in height, and a wing 65 feet, by 32 feet, and 32 feet in height.

At SYDNEY, a contract for the construction of a Post Office, &c., building, on the corner of Charlotte and Dorchester streets, was entered into 12th December, 1888, and construction is now in progress. It consists of a main three-story brick building, on a stone foundation, 57 feet by 44 feet, with a clock tower on the street corner, and a one-story annex, 45 feet by 23 feet, in the rear. The ground floor of main building is to be occupied by the Post Office, the first floor by the Customs, Inland Revenue and Marine offices, and the attic is for the apartments of the caretaker. The Examining Warehouse and the Weights and Measures offices will be in the annex.

General repairs, alterations and improvements have been made to the Public Building and Examining Warehouse, HALIFAX; the Public Building, NEW-GLASGOW; Post Office, WINDSOR, and Public Building, YARMOUTH. (Appendix No. 2, pages 24-26.)

### HARBOURS AND RIVERS.

The sum of \$95,793.81 has been expended on construction, and repairs in this Province, during the fiscal year, as under.

At ARISAIG, a contract was entered into for extending the pier 100 feet, and for protecting its seaward face by a deposit of heavy stone; but up to its close no work, except in the way of procuring material, had been done.

BARRINGTON.—A wharf—carried across the flats—to reach fairly deep water, has been commenced, and materials procured to construct about 600 feet of the proposed work.

At BATTY ISLAND, a small wharf, 60 feet in length and 12 feet in width, was built.

At BAYFIELD.—In november, 1887, a contract was entered into for repairing, raising and close-piling the two outer blocks of the wharf, cutting down the central and shore blocks, and for the construction of a new work between the outer blocks and the shore. The whole was completed in November, 1888.

The work of extending the breakwater at Pomquet Point 300 feet was completed in October, 1888.

**AT BAY ST. LAWRENCE.**—Near the head of the bay there is a small lake enclosed by a beach of sand and gravel.

In 1887 a channel was opened through the beach to admit of the passage of boats at high water. Shortly after its completion it was filled in from the outside, over a distance of about 100 feet, and during 1888–89 the channel, which had been alternately opened during freshets and closed during northerly gales, was re-opened and protected by a pier extending 53 feet beyond high water, and by a work of brush and stone, 30 feet in length, inside of it.

The channel remained opened for a while after the completion of the protection work, but is now closed by a short bar opposite the inner end of the pier.

**BEAVER RIVER.**—The breakwater has been extended 100 feet and other improvements made.

**BIG BRAS D'OR.**—The wharf, mentioned in my report of last year as being under construction, was completed with the unexpended balance of the appropriation for 1887–88.

**BIG POND.**—During the year the unexpended balance of the amount appropriated for the previous year was expended in completing a wharf 200 feet in length and 20 feet wide, with a depth at the outer end of 8 feet at lowest water level.

**BLUE ROCK.**—The contract entered into in November, 1886, for the construction of a breakwater 326½ feet in length, to extend in a south-westerly direction from Blue Cape, was completed in October, 1888.

**BROAD COVE.**—This work, 400 feet in length, was completed in December, 1888.

**AT CHETICAMP,** a contract was entered into 10th June, 1889, for the construction of a wharf on the eastern side of the harbour, to consist of an approach 125 feet in length and 30 feet wide over a distance of 60 feet from its outer end, with end and side walls of stone and centre filling of earth or stone; and an extension, 80 feet in length, in two blocks, with openings of 17 feet 6 inches. The outer block is to be 60 feet in length along the channel face, and is to have a depth of 4 feet at extreme low water.

**DELAP'S COVE.**—The western face of the pier protecting the opening into the harbour was extended inwardly 100 feet. A large warping anchor to assist vessels in getting out to sea was placed off the end of the pier, and a portion of the beach was raised.

**AT DIGBY,** a contract was entered into for the removal of the outer block which had been carried, bodily, into the dredged channel by the storm of December 1885, and, after much difficulty, the contractor tore the block to pieces and removed it down to the surface of the mud. During the year the construction of a new block, 45 feet by 45 feet, to replace that carried away, was completed by the Department, and other improvements were effected.

**EATONVILLE.**—In August, 1888, instructions were given to extend the breakwater 80 feet, but after the work had been commenced a severe storm threatened the total destruction of the inner end of the structure, and work on the extension was therefore suspended, and every exertion made to save the damaged inner end, which passed through several severe storms of last winter without further damage,

At LOWER HORTON, a new wharf, 172 feet in length, has been built on the site of the old.

McNAIR'S COVE.—The re-construction of 160 feet of the breakwater was completed by the contractor in December, 1888.

NOEL.—During the last fiscal year the Department constructed a landing wharf on the west side of the bay. The wharf, including the approach, is 275 feet in length and 25 feet wide with an "L" at the outer end 35 feet long.

At PICTOU ISLAND.—The balance of the amount appropriated for 1887-88 was expended in completing the extension of the east and west wharves. The east wharf has been extended 100 feet and the west wharf 92 feet 6 inches.

PORT HOOD.—During the year a new block 48 feet by 22 feet, was constructed at the south end of the "L" of the pier.

SHEET HARBOUR.—In January last a contract was entered into for the construction of a ballast wharf on the north side of the East River, from the end of the remains of Ball's Wharf, running westerly a distance of 180 feet, and 20 feet wide, with an "L" 20 feet long and 20 feet wide at the western end, and at the close of the fiscal year the work was nearly completed.

At TATAMAGOUCHE, a wharf 96 feet in length was built on the east side of the river, nearly opposite the mouth of the French River, to accommodate the inhabitants living on the eastern side of the river, who were obliged to haul their produce for shipment to the wharves at Tatamagouche, a distance of 3 miles, and the coal which they use from the wharves to their homes.

WALLACE.—The wharf at this place was extended during the past fiscal year to prevent the inner end of the dredged channel from silting up, and at the same time to afford additional shipping facilities.

WESTERN HEAD.—Shortly after the completion of this breakwater, in 1888, this coast was visited by an unusually heavy gale, which destroyed the outer end of the structure, and an appropriation having been made at the session of 1889, the damage done will be made good.

REPAIRS AND IMPROVEMENTS were made to the structures at the following places, viz.:— BRULÉ, CRANBERRY HEAD, COW BAY, at which place extensive repairs were made to the breakwater; EAST BAY, GREEN COVE (or PORT MAITLAND), HAMPTON, JONES HARBOUR, KINGSPORT, LITTLE NARROWS, LISMORE, MABOU, MAIN À DIEU, MARGARETVILLE, PARKER'S COVE, PARRSBORO', PARTRIDGE ISLAND PIER, PORT GREVILLE, PORT HOOD, PORT LORNE, ROSEWAY BEACH, ROUND BAY, SPENCER'S ISLAND, TROUT COVE.

DREDGING, either by one of the Department's dredges, or by hand, was also done for the improvement of navigation, or to enable fishing boats to make a shelter, at the undermentioned localities:—

ARISAIG, BARRINGTON, BAYFIELD, GABAROUS and BELFRY LAKES, GRANTON, GREEN HARBOUR, LITTLE GLACE BAY, McNAIR'S COVE, PARTRIDGE ISLAND RIVER, PICTOU, YARMOUTH.

(For details, see Appendix No. 5, pages 55-119.)

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## PRINCE EDWARD ISLAND.

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### PUBLIC BUILDINGS.

During the past year the sum of \$1,812.17 was expended on construction and repairs public buildings.

CHARLOTTETOWN.—Sundry repairs were executed and a new time lock placed in the door of the safe in the Receiver General's Department.

At MONTAGUE.—Additional grading was done around the post office, and the building occupied. (Appendix No. 2, page 24.)

### HARBOURS AND RIVERS.

There has been expended on harbours during the past year, the sum of \$15,172.76.

At CASCUMPEC, the work of excavating a channel through the inner bar, which was commenced in 1885, was continued, and with the amount voted for expenditure during the last fiscal year a cut 150 feet in length, 25 feet wide, and to a depth of 15 feet at low water, has been made, the material blasted and removed amounting to 450 cubic yards.

HICKEY'S PIER.—The narrow block built along the eastern face of the outer end, which was in danger of tumbling into the dredged channel, was renewed and replaced by a new block, its top extending over the old main blocks, and new floor-stringers and planking were placed upon the spans and outer block.

At SOURIS, or COLVILLE BAY, a strongly constructed timber block, 30 feet square, was placed at the outer end of the seaward face of the breakwater, to prevent the stone from moving around the end, and the base of the block was close piled.

GENERAL REPAIRS and IMPROVEMENTS were made on the following piers, viz.:—ANNANDALE, BELFAST, CAMPBELL'S COVE, GEORGETOWN, LEWIS POINT, MALPEQUE, NORTH CARDIGAN, NORTH RUSTICO, PINETTE, POWNAL SOUTH RUSTICO, STURGEON, TIGNISH.

Dredging was performed in the undermentioned harbours.

CHARLOTTETOWN—at various wharves—and at RED POINT, where 12 feet depth of water was obtained. (Appendix 5, pages 55 to 62, and page 114.)

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## NEW BRUNSWICK.

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### PUBLIC BUILDINGS.

The sum of \$19,679.30 was expended on construction and repairs of Public Buildings.

At DALHOUSIE, the Post Office, etc., building, which was described in my report of last year, is still in progress.

At FREDERICTON, the attic rooms of the post office were partitioned to provide a residence for the caretaker.

At St. JOHN, the roof covering of the Custom House was replaced with asphalt, the zinc faces of the erestring were removed and galvanized iron substituted, and the hydraulic hoist provided with heavier shafting, valves, &c.

WOODSTOCK. Arrangements are being made to place a clock in the turret of the post office, etc., building.

Repairs and improvements were made to the Public Building, BATHURST, Post Offices, CARLETON, CHATHAM, FREDERICTON, and MONCTON, Public Building, NEWCASTLE, Custom House, Marine Hospital, Post Office and Savings Bank, St. JOHN, Public Building St. Stephen, and some furniture was supplied to the residence of the Deputy Warden of the Penitentiary, DORCHESTER. (Appendix No. 2, pages 26, 27 and 28.)

## HARBOURS AND RIVERS.

Expenditure on construction and repairs \$54,178.77.

BELLIVEAU.—In March, 1888, a contract was entered into for the construction of a wharf 200 feet long and 24 feet in width (measured on top), after which it was arranged with the contractor to extend the work 33 feet, all of which was satisfactorily completed on the 9th November, 1888.

At CAMPBELLTON, in order to provide a place of deposit for ballast, a contract was entered into 23rd April, 1889, for the construction of a "ballast wharf," the proposed structure being an isolated block 140 feet in length by 35 feet in width, and having at it a depth of 18 feet at extreme low water, spring tides. At the close of the fiscal year this work was fairly in progress.

CAPE TORMENTINE.—Active operations on the wharf were not commenced by the contractor until August, 1888, between which time and the close of the last fiscal year 729 feet of the stone approach have been built.

The work will be 2,500 feet in length, with an L at the outer end, consisting of two branches, each 400 feet in length. Of this length of 2,500 feet, the inner or shore end, for a distance of 1,300 feet, will be built wholly of stone, the remainder and the L of close-faced crib work, completely filled with rock ballast.

At EDGETT'S LANDING, the construction of a ballast wharf having become a necessity, a contract was entered into for the same in January, 1889.

Work was commenced by the contractors in the beginning of June, 1889, and abandoned by them at the end of the month, when, having provided the greater portion of the materials required, they found themselves unable to proceed further.

At FORT DUFFERIN, the timber "break" was completed in August, 1888.

GRAND ANSE.—The reconstruction of the breakwater, which had been in progress during the previous two years was completed.

MIZZONETTE.—To accommodate the residents of the locality, a contract was entered into on the 19th February, 1889, for the construction of a wharf, and the materials required having been got out during the winter, the work was commenced early in June, and had by the 30th or end of the fiscal year been so carried on that it was about a quarter done, the foundation of nine blocks being placed.



The work under construction consists in all of a length of 500 feet, 480 feet of which will be 12 feet wide on top, the remaining 20 feet or outer block 20 feet wide, the whole composed of "blocks" and "spans," and giving at the outer end a depth of 2 feet at low water.

At PARTRIDGE ISLAND, the reconstruction of the eastern pier referred to in my report of last year, has been completed.

At RICHIBUCTO with the amount appropriated 225 feet of the breakwater was re-filled with brush and stone, and extra walings were put on, 300 feet of new work was built and fender piles replaced.

At SHIPPEGAN during the past season a breach made in the winter of 1887-88 has been secured by the reconstruction of the length carried away (60 feet), general repairs also being effected.

To provide wharfage accommodation at St. Louis, a contract was entered into on 6th November, 1888, for the construction of a wharf 200 feet in length and 30 feet wide on top, to extend in a north-easterly direction from the outer end of the south abutment of the bridge. This wharf will have at it a depth of 7 feet at low water spring tides, which rise here  $3\frac{1}{2}$  feet, neaps 2 feet. Materials were got out during the winter, and the work commenced during the last week of the fiscal year.

REPAIRS AND IMPROVEMENTS, where required, were made to the breakwaters at ANDERSON'S HOLLOW, HOPEWELL CAPE, POINT DU CHÊNE and UPPER SALMON RIVER.

DREDGING was done on the "Traverse" near CAMPBELLTON, on the KENNEBECASIS, from below Hampton to the bridge at PERRY'S POINT, on the OROMOTO SHOALS, in the St. John River, at the Anchor Line wharf, ST. JOHN HARBOUR, while improvements were made on the RIVER MADAWASKA and at various points on the ST. JOHN. (Appendix No. 5, pages 81 to 87, and 112 and 113.)

## PROVINCE OF QUEBEC.

### PUBLIC BUILDINGS.

During the year the sum of \$290,133.91 was expended on construction and repairs, of the undermentioned public buildings:—

AYLMER, Post Office.—This building, which was described in my report of last year, was completed, and furnished with a hot water heating apparatus, and is now being fitted up for occupation.

COATICOOK, Public Building, which was described in my report of last year, is being carried on so as to warrant its execution and completion during the autumn of 1889; a heating apparatus has been put in, and fittings for Post Office.

FRASERVILLE (Rivière du Loup).—On 26th March, 1889, Cadastral Lot 266, having a frontage of 100 feet on Iberville street and 75 feet on Champlain street, was purchased for a Post Office etc., Building.

JOLIETTE.—The Post Office, etc., building will, it is expected, be completed in the autumn.

**LACHINE.**—Cadastral lot No. 253, on St. Joseph street, the main street of the town, was acquired for a site, and plans, &c., for a Post Office building thereon, are being prepared by this Department.

**MONTREAL.**—The fittings for the various armouries and furnishings for offices were supplied, and the places are now occupied.

Extensive alterations were made to boilers and heating apparatus in the Custom House. The Record Office was enlarged and other work done.

Various alterations and improvements were made in the Examining Warehouse and Post Office.

**ST. HYACINTHE.**—On 19th March, 1889, a site, consisting of Lot 525, and a portion of 524, on the corner of Girouard and St. Joseph streets, with frontages of 81 feet 6 inches, and 133 feet 3 inches, respectively, was acquired, and plans, &c., for the construction of a public building are in course of preparation.

**ST. JEROME.**—Public Building. This building, which was described in my report of last year, has since been in constant progress; plans for the hot water apparatus are prepared, and the building is expected to be complete for occupation during December, 1889.

**ST. VINCENT DE PAUL PENITENTIARY.**—The walls of the western Dormitory wing, which is 116 feet by 42 feet on plan, and is to contain 120 cells, were carried up continuously, and are expected to be roofed in and enclosed by October, 1889.

Additions, alterations and repairs were made to the various buildings and the water works.

**REPAIRS, ALTERATIONS and IMPROVEMENTS** were effected on the Marine Hospital, CHICOUTIMI; Post Office, HULL. The Ctidal, Custom House, Immigration Building, Marine Hospital, Observatory, Post Office and Queen's Wharf Building, QUEBEC; Public Buildings, SHERBROOKE and SOREL, and to the Custom House and Post Office, THREE RIVERS. (Appendix No. 2, pages 28-30).

#### HARBOURS AND RIVERS.

The expenditure during the year for construction and repairs amounted to \$188,088.00.

Works of construction were carried on at

**BAIE ST. PAUL** where the wharf at Cap aux Corbeaux was extended 60 feet on a width of 50 feet, the work being done by contract.

**AT CAP DE CHATTE**, the channel was widened and deepened, and otherwise improved.

**AT CAP SANTÉ**, a number of the most dangerous boulders were blasted and removed.

**AT COTEAU DU LAC**, a wharf has been built, consisting of a block 100 feet long by 20 feet wide, with an approach of 110 feet, which has a width of 20 feet. There is 6 feet of water at the outer side of the block, the top of which is 5 feet above water line. A passenger and freight shed, 20 feet by 24 feet, was built on the lower side of the approach.

At the close of the fiscal year the Department was engaged in re-building—over a length of 800 feet—the wharf at COTEAU LANDING, at which steamers make regular calls.

At ETANG DU NORD, that part of the breakwater which was sunk in 1887-88 was filled with stone.

ILE PERROT.—During the last fiscal year a length of 325 feet of pier work, 18 feet in width, was built from the shore outwards, leaving a length of 275 feet yet to be built.

At ILE VERTE, an isolated block, 50 by 40 feet, was built, in 1887, and during the last fiscal year an approach from the block to the shore has been commenced, but there remains 800 feet to be constructed to complete the work.

At LA GRANDE DÉCHARGE of Lake St. John a pier and an ice-breaker have been built.

At LAPRAIRIE, 335 feet in length of crib work wall was built to a height of 11 feet below low water, from the steamboat wharf westward. It is built of open work, 20 feet in width, with a batter of 1 in 12 on the face.

LES EBOULEMENTS.—A room for the accommodation of passengers waiting for the boats was built on the outer end of present pier. It is constructed on posts. Its dimensions are 45 by 25 feet; the roof is covered with metal and the whole building painted with waterproof paint.

LONGUEUIL.—A contract has been entered into for the completion of this wharf, but little work had been done at the close of the year.

At MURRAY BAY a new waiting room 30 by 24 feet was built.

NEWPORT RIVER.—Further pile-protection work was constructed.

At NICOLET a further length of 553 feet of pile-protection work has been built.

PERCÉ.—The landing pier commenced in the winter of 1888 was completed in May last. It was built by contract, and its dimensions are: length over all on top, 320 feet; width on top, 20 feet; height at outer end,  $36\frac{1}{2}$  feet—of which  $26\frac{1}{2}$  feet only are above the bed of the river, it having settled down some 10 feet during construction; depth of water at outer end, 16 feet at low spring tides, with a rise and fall of from 5 feet to 5 feet 6 inches in full spring tides, and 3 feet ordinary neap tides.

RIVER DU LIÈVRE.—With the intention of fostering especially the phosphate industry and facilitating its transport from the mines to the nearest railway, which is at Buckingham, a contract for the construction of a lock and dam at the Little Rapids was entered into in December, 1886. The lock and dam will be of sufficient height to flood the Long Rapids about  $7\frac{1}{2}$  miles above the site of the lock, and therefore will give an uninterrupted navigation of 22 miles—that is, from the village of Buckingham to the foot of High Falls. The lock has a length of 160 feet between the gates and is 32 feet 7 inches in breadth, with 8 feet of water on the mitre sills. Entrance piers are also under construction. Proper provision will be made for the passage of timber over the dam, which is being constructed 11 feet above low water at the head of the Little Rapids. The work is well under way.

RIVER RICHELIEU. Another ice pier has been built to afford additional protection to the city of Sorel during the run of ice in the spring.

On the RIVER YAMACHICHE a channel 2,500 feet in length was made through the obstruction caused by a land slide. The flooded lands are now relieved and the water brought to its normal stage.

**SHIP CHANNEL—RIVER ST. LAWRENCE.**—In January, 1889, the control and management of the work was assumed by this Department. During the winter extensive repairs were made to the dredging plant, which, on the opening of navigation, was placed to work at Cap à la Roche, Pouliet Rayer and Cape Charles, in deepening the channel at those points, which are adjacent to each other, to 27½ feet below low water, spring tides, and up to the close of the fiscal year a fair commencement had been made.

The channel which has been opened is 300 feet wide on the straight portions, and 320 feet wide at the bends, but it has been found difficult in many places to navigate large vessels, by reason of these bends, or the position of the channel where the "set of the current" has been crossed obliquely, and a further expenditure will have to be made to improve the channel at such points.

A full description of work done by the Harbour Commissioners of Montreal on the channel from the 1st December, 1888, will be found in the Report of the Commissioners, which is printed as Appendix No. 6, page 127.

At ST. ALPHONSE a slip has been built on the north side of the wharf, for the accommodation of small vessels.

At STE. ANNE DU SAGUENAY, timber required for the proposed wharf having been obtained during 1887–88, the work of construction was commenced during the past year, and a length of 77 feet built.

**STE. ANNE DE SOREL.** Another ice pier, 30 by 24 feet dimensions, 21 feet 6 inches in height, was built at the entrance to the Chenal du Moine, about 1½ miles below the village of Ste. Anne.

A part of the wharf at TADOUSSAC was re-built and raised 3 feet, a slip constructed and the flooring renewed.

At TROIS PISTOLES an extension of the wharf was commenced, but was not completed at the close of the fiscal year.

REPAIRS and IMPROVEMENTS were made to the wharves at BAIE ST. PAUL (Isolated Block), BERTHIER (EN BAS), CAP À L'AIGLE, CHICOUTIMI, MURRAY BAY, RIVIÈRE OUELLE, ST. ALPHONSE, ST. LAURENT (Island of Orleans.)

Dredging and other improvements to navigation were carried on at PAPINEAUVILLE, POINTE AUX ANGLAIS, PORT AU PERSIL, RAPIDE MANIGANCE (River St. Maurice), RIVIÈRE DU LOUP (EN BAS), RIVER L'ASSOMPTION, RIVER MEKINAC, RIVER RICHELIEU, RIVER ST. FRANCIS, ST. PLACIDE, and STE. ANNE DE LA PÉRADE. (Appendix No. 5, pages 87–97 and 115–117.)

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## PROVINCE OF ONTARIO,

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### PUBLIC BUILDINGS.

The expenditure on Public Buildings in this province for construction and repairs amounted to \$706,672.04.

**ALMONTE.** A contract was entered into 11th June, 1889, for the erection of a post office and building on a site obtained at the junction of Mill and Little Bridge streets. It is to have a main portion 2½ stories and basement 51 feet by 31 feet and a one story annex 27 feet by 18 feet. Walls to be brick, with stone dressings, on stone foundations.

**BRAMPTON.** A contract for the construction of a Post Office, &c., building was entered into on 23rd October, 1888, and the works are now in progress.

It will consist of a brick three-story main portion, 47 feet by 42 feet on a stone foundation, with a one story brick building, 40 feet by 18 feet in the rear, and connected with the main building. The basement of the main building is to contain fuel and furnace rooms, the ground floor the Post Office, the first floor the Customs and Inland Revenue offices, and the attic the caretaker's quarters. The annex is to be for Weights and Measures and Examining Warehouse.

**CAYUGA.** The Post Office building which was described in my report of last year was completed, and supplied with a hot water heating apparatus, and is now being fitted up and furnished for occupation.

**COBOURG.** A contract for the erection of an addition to the Post Office, Custom House, &c., 18 ft. in width, by the depth and height of the present building, was entered into in December, 1888, and the work is in progress.

**GANANOQUE.**—The Post Office building described in my report of last year has since been completed, supplied with a hot water apparatus and fitted up for occupation.

**GODERICH.** Lot 5, containing half an acre, on the south side of West street, having been acquired as a site for Post Office, &c., building, on 12th November, 1888, a contract was entered into for the construction of a two and a-half story and basement building, 46 feet 6 inches by 34 feet, on plan, with a one story and basement stone annex, 34 feet by 14 feet 3 inches. The building is to consist on the ground floor of the Post Office and Examining Warehouse, on the first floor the Customs and Inland Revenue Offices, and in the attic will be the caretaker's apartments.

**GUELPH.**—The Post Office has been supplied with a hot water heating apparatus.

**HAMILTON.**—The Drill Shed has been completed and the Armories furnished with a hot water heating apparatus.

**LINDSAY.**—The building for the Post Office, Custom House and Inland Revenue, which was described in my report of last year, has since been carried on steadily. Plans were prepared and a contract entered into for the construction of a hot water heating apparatus.

**NAPANEE.**—Post Office, Custom House and Inland Revenue. The works in connection with this building, which was described in my report of last year, have been in steady progress. Plans, &c., have been prepared for a hot water heating apparatus.

**OTTAWA.**—Central Experimental Farm.

The following works, referred to in my report of last year, have been completed: Superintendent-General's residence; four residences for the staff officials; barn

and stabling; museum and offices; heating apparatus for the residences, museum and offices.

Contracts have been entered into for the construction of a building for greenhouse and seed stores. The latter will be a one and a-half story brick building on a stone foundation, having a ground floor, containing a seed room, 24 feet by 17 feet; a potting room, 37 feet by 16 feet, and two rooms above. Adjoining the potting room are two greenhouses of wood, on a stone foundation, 80 feet 6 inches by 13 feet, and 80 feet 6 inches by 14 feet, respectively. A hot water heating apparatus has been put in, and the building is now occupied.

In August last a contract was entered into for the construction of a one and a-half story building, 100 feet by 30 feet, for a hennery, which was completed during the year.

On 23rd October a contract was entered into for the construction of a cottage, known as No. 1 cottage, near the barn, and a stable for the Superintendent, both of wood on stone foundations. The cottage will contain an unfinished basement; the ground floor to contain a parlor, a kitchen, a pantry, a storeroom and a shed; and the attic three rooms. The stable will contain a carriage room, stalls, a loose box, and a loft.

New Departmental Building, Wellington Street.—Specifications and drawings were prepared and tenders received for three passenger elevators and one freight elevator, which are now being erected; the iron staircase and heating apparatus were completed, and the building is being fitted up for occupation, and was so far advanced that the second floor was occupied by the Indian Department on the 1st May.

Parliament Building.—The roof covering of the Library was renewed in copper. Alterations were made in the quarters of the Speaker of the Senate, whereby two additional rooms were obtained.

The Printing Bureau is nearly completed, and is being fitted up.

PEMBROKE.—Post Office.—This building, described in my report of last year, is now in progress.

PRESCOTT.—The Post Office, Custom House and Inland Revenue Offices are in course of construction.

TRENTON.—The Post Office, &c., building described in my report of last year has been carried on nearly to completion, and is being fitted up with a hot water apparatus, and the fittings and furniture for the use of the officials of the various departments.

REPAIRS, ALTERATIONS and IMPROVEMENTS have been effected at the Post Office, &c., AMHERSTBURGH; Post Office, &c., BARRIE; Post Office, BELLEVILLE; Post Office, &c., CHATHAM and CORNWALL; KINGSTON, Penitentiary; Government House, OTTAWA; Departmental and Parliament Buildings, OTTAWA; Victoria Hall, OTTAWA; while the Parliament Grounds and Major's Hill Park were kept in good order. Various streets, under the control of the Department, were graded and macadamized, and otherwise improved, and the roadways, sidewalks and footpaths were kept clear of snow during the winter, St. THOMAS, Post Office, &c., TORONTO, Custom House, Examining Warehouse, Inland Revenue Offices and Post Office.

(Appendix No. 2, pages 31-38).

## HARBOURS AND RIVERS.

Expenditure on Harbours and Rivers for construction and repairs, \$346,716.66

**BELLEVILLE.**—The contract for dredging in this harbour, which was entered into in 1886, was completed in July, 1889.

At **COBOURG** the outer 150 feet of the superstructure of the western pier was re-built under contract.

At **KINCARDINE** the work of re-building the wharfing around the inner basin is being continued.

**KINGSTON.**—During the past year 3,890 cubic yards of rock were blasted and removed from the Point Frederick Shoal.

**LITTLE NATION RIVER.**—Excavation through the rocky shoal at the mouth of Moose Creek, which obstructs navigation, has been continued, and a large amount of material removed.

**OAKVILLE.**—The western pier has been re-built from low water mark up.

**PENENTANGUISHENE.**—During 1888-89 a pile structure, 12 feet in width and 850 feet in length, was constructed in an average depth of 12 feet of water. Behind this structure an embankment 30 feet wide was formed with brush, stone and earth, giving to the wharf so completed a total width of 42 feet. In addition to this wharf, a similar structure, 350 feet in length, was built at the foot of Barrie street.

**PORT ARTHUR.**—In October, 1888, a contract was entered into for the construction of a further length of 1,500 feet of breakwater, with block piers at each end, to the westward of the work already completed, an opening of 350 feet being left between the old work and the new, to permit vessels to enter the port.

In May, 1889, operations on this new work were commenced, and up to the close of the fiscal year 300 feet had been constructed.

During the year a commencement was made to extend the talus of stone along the front of the work built under the first contract, it having been found that the bottom was eroding under the action of seas during heavy gales. It may here be mentioned that this breakwater has successfully withstood the force of breaking seas driven by gales travelling at the rate of 54 miles an hour, and also ice shoves from the outer bay, when the ice has been pushed completely over the structure and left remaining thereon to a height of 19 feet.

**PORTSMOUTH.**—Work was continued during the past fiscal year in the renewal of the upper 7 feet of this pier, and at its close it was well in hand.

**RIVIÈRE AUX PUCES.**—In September, 1888, a contract was entered into for the construction of 350 feet of close sheet-piling at the mouth of this river, 200 feet to be driven on the east side and 150 feet on the west side, to form a channel 40 feet in width, and at the close of the fiscal year the work was well under way.

**SAULT STE-MARIE.**—The extension of the Government wharf a length of 150 feet into the river to obtain increased shipping facilities was completed in June, 1889.

**SOUTHAMPTON.**—That portion of the landing pier which had been destroyed by fire was re-built from the water level.

At SUMMERSTOWN a warehouse 24 feet by 30 feet was built on the wharf for the accommodation of the public.

TORONTO.—In May, 1889, a contract was entered into for improving the eastern entrance, the works required consisting of the dredging a channel 300 feet in width to a depth of 12 feet below low water, the construction of protection works on either side of the new channel, and the continuation and completion of the harbour protection works on the eastern side of the proposed entrance—extending from Fisherman's Island westwardly to a junction with the channel works; and at the close of the year dredging was well under way.

The work of making good the stone slope in front of the Island works by a deposit of heavy stone was continued by day's labour.

REPAIRS and IMPROVEMENTS were effected to the works at COBOURG, PORT ALBERT, PORT HOPE, RONDEAU.

Dredging was carried on at BRIGHTON, GODERICH, KINCARDINE, KINGSVILLE, MEAFORD, PORT ELGIN, PORT HOPE, RIDEAU RIVER (North Branch), RIVER KAMINISTIGUIA, RIVER OTTAWA (channel between Pembroke and Petewawa), and SOUTHAMPTON. (Appendix No. 5, pages 98–106 and pages 115–117).

## PROVINCE OF MANITOBA.

### PUBLIC BUILDINGS.

During the year the sum of \$78,490.13 was expended on construction and repairs Public Buildings in this Province.

BRANDON.—A site for a Post Office, with a frontage of 96 feet on Rosser avenue, by a depth of 100 feet, was obtained, and on the 18th day of June last a contract was entered into for the construction of a building thereon. The building will comprise a main portion, 82 feet by 41 feet, to consist of a stone basement surmounted by three stories and an attic, in brick; and a one-story brick annex, 35 feet by 30 feet. On the ground floor will be the Post Office, the Examining Warehouse, the Gas Inspector's Office, and the Weights and Measures Office; on the first floor the Customs Office, Land Offices and vault; and on the second floor the Inland Revenue Offices and caretaker's apartments—the attic to be unfinished.

ST. PAUL'S.—On the 13th May, 1889, a contract was entered into for the construction of a school building, a laundry, a cow house, a stable, closets, &c.

*School Building.*—A "T" shaped 2½-story brick building, on a stone foundation, with wooden roof, floors and partitions, the front portion to be 80 feet by 33 feet 6 inches and the rear portion 33 feet 6 inches by 33 feet 6 inches. On the ground floor are to be two class rooms, two offices, a dining room, a kitchen, a scullery and a pantry; on the first floor two dormitories, nine bedrooms, and two wash and bath rooms, and in the attic eleven rooms.

*Laundry.*—A two-story wooden building, on a stone foundation, 24 feet by 20 feet.

*Cow House.*—A one-story wooden building, 28 feet by 24 feet.



*Stable and Carriage House.*—A one-story and loft wooden building, on a pile foundation, 33 feet by 21 feet.

**STONY MOUNTAIN—PENTITENTIARY.**—In January, 1889, a contract was entered into for the erection of a residence for the surgeon, one for the Roman Catholic chaplain, and one for the Episcopal chaplain. In each case the building is to be a one and one-half story of brick, resting on stone foundation, with wooden partitions and roof. The basement will contain a dining room, a kitchen, a servant's room, a store and furnace room; the ground floor a parlor, a reception room, a library, a breakfast room, a bedroom, a bath room and a hat room; and the attic four bedrooms. Special drains, with cess pool, are being put in, as the distance to connect with the general system of drainage is too great. Wells are being sunk, one for each residence, by convict labour.

The Warden's stables have been completed, as has been the hospital building, while stables for the Deputy Warden have been constructed by convict labour.

**REPAIRS, ALTERATIONS AND IMPROVEMENTS** were carried out at **STONY MOUNTAIN PENTITENTIARY**, and to the Custom House, Land's Office and temporary Post Office, **WINNIPEG**.

(Appendix No. 2, pages 38 and 39.)

## HARBOURS AND RIVERS.

**The RED RIVER.**—The work of improving the navigation of the Red River, from Selkirk into Lake Winnipeg, by dredging, was continued, and much good work done.

**The WHITE MUD.**—During the first part of the fiscal year the channel was improved between Totogan and McArthur's Landing, and the bars which obstructed the navigation of the river were removed to such a width and depth as to permit boats to pass freely, after which work was resumed on the bar at the mouth of the river.

During the winter necessary repairs were made to the plant, which, on the opening of navigation, was placed to widen the channel between Totogan and McArthur's, after the completion of which work in the channel through the bar at the mouth was resumed, and was being proceeded with at the close of the fiscal year.

Had not dredging been done at the mouth and in the river itself, navigation would have ceased, owing to the extreme lowness of the water which has prevailed during the past two years. (Appendix No. 5, pages 106, 107, 117 and 118.)

## NORTH-WEST TERRITORIES.

### PUBLIC BUILDINGS.

Expenditure for construction and repairs on Public Buildings \$147,998.26.

**CALGARY.**—The barracks building referred to in my report of last year is nearly complete, the mess-room being now occupied as a dormitory, and the hospital is complete ready for occupation.

On the 8th November 1888, a contract was entered into for the construction of a two-story stone Court House, having brick partitions and wooden floors and roof, and

measuring 91 feet by 51 feet on plan. On the ground floor are to be rooms for sheriff, grand jury, barristers, witnesses, jailers and prisoners; a vault, water closets, a furnace room, and a fuel room—the two last mentioned going from the ground floor ceiling to below the level of the ground. On the first floor are the court room, rooms for judges, barristers and jury, and water closets.

**INDIAN HEAD.**—On 5th November, 1888, a contract was entered into for the construction of buildings in connection with the Experimental Farm, viz.:—

*Superintendent's Residence.*—A wooden two-story building, with a stone basement, the main building 42 feet by 34 feet, and a kitchen wing 24 feet by 21 feet.

*Horticulturist's Residence.*—A wooden two-story building, 32 feet by 35 feet, on a stone basement, with a lean-to summer kitchen, 25 feet by 10 feet in the rear.

*Workmen's Cottage.*—A wooden one and a-half story cottage, 27 feet by 21 feet, on a stone basement, with a lean-to summer kitchen, 14 feet by 10 feet, in the rear.

*Barn and Stabling.*—These are to be of wood, and consist of a main building 111 feet by 50 feet, 40 feet in height, on a 12 feet stone basement, and a wing 65 feet by 32 feet, and 32 feet in height. The basement is arranged to accommodate horned cattle and horses, the ground floor as a driving floor, and for hay storage.

**MACLEOD.**—The stable for the use of the Police, for the construction of which a contract was entered into in November, 1888, has been completed. It consists of a main portion, 131 feet 6 inches by 29 feet 6 inches, containing fifty one stalls, and a harness or saddle room, 40 feet by 14 feet, adjoining. Over the main portion is a low loft.

**QU'APPELLE.**—Industrial School.—The girls' school, bake-house and carpenter's shop are completed.

**REGINA.**—A hot air furnace—with connections,—was placed in the basement of the Court House.

On 14th May, 1889, a contract was entered into for the construction of an Industrial School at White Farm, near Regina, which is now in course of erection. The building is to be "T" shaped, and consist of a front portion, 180 feet by 37 feet, with a rear wing 75 feet by 37 feet.

On 19th March, 1889, a contract was entered into for the erection of a new residence for the Lieutenant Governor. The building will be of brick on a stone foundation, with partitions, floors and roofs of wood, to consist of a main portion 64 feet 6 inches by 55 feet, and that for servants, offices and bedrooms 56 feet by 42 feet.

On 3rd November, 1888, a contract was entered into for the erection of a riding hall, to replace that destroyed by fire, and the work is in progress. The building will be of wood, 125 feet by 210 feet, exclusive of the porches. (Appendix No. 2, pages 39 to 42.)

## PROVINCE OF BRITISH COLUMBIA.

### PUBLIC BUILDINGS.

Expenditure during the fiscal year, \$17,099.08.

**KAMLOOPS.**—On the 4th June, 1889, a contract was entered into for the construction of three wooden buildings, on stone foundations, for the Indian Industrial School, viz.:

*Central Building.*—To consist of a main building, 31 feet by 34 feet, and an annex 25 feet by 18 feet; to contain on the ground floor a large dining room, a Superintendent's sitting room, a Superintendent's office, a kitchen and a hall; and on the first floor two school rooms, a sick room, a Superintendent's bedroom and closets.

*Boy's Building.*—A building, 40 feet 9 inches by 33 feet 6 inches, to contain on the ground floor a boys' play-room, a dormitory, a tailor's room, a teacher's room, a lavatory, two bath-rooms and a hall; and on the first floor two boys' dormitories, a teacher's bedroom, a spare room, a passage and closets.

*Girls' House.*—A building 30 feet 6 inches by 22 feet, to contain on the ground floor a laundry, an ironing room and a drying room; and on the first floor two girls' dormitories, a servants' bedroom and closets.

**KUPER ISLAND.**—A contract for the erection of buildings, for the Indian Industrial School, similar to those described above for Kamloops, was entered into on 27th May, 1889.

**NEW WESTMINSTER—Penitentiary.**—On the 23rd April, 1889, a contract was entered into for the construction of a two-story wooden building, on a stone foundation, to be used as a residence for the Warden of the Penitentiary. This will have a main building 55 feet by 48 feet, and a wing 30 feet 6 inches by 20 feet, containing on the ground floor drawing-room, dining-room, library, bedroom, hall, kitchen, scullery, pantry and conservatory, and on the first floor seven bedrooms, bath-room and hall.

The dwelling for single officers, referred to in my report of last year, has been completed, grates and stoves, &c., supplied. A cow-house was built by convict labor. Gas was laid throughout the grounds, cast-iron lamp posts placed in position and several extra lights placed in the main building. Various alterations and improvements were made in other parts of the buildings.

**VANCOUVER.**—A site for a Post Office, &c., Building—on the corner of Penden and Granville streets—with frontages of 130 and 75 feet respectively, has been offered, and plans and specifications are being prepared.

**REPAIRS, ALTERATIONS and IMPROVEMENTS** were effected at the Post office NANAIMO, Public Building, NEW WESTMINSTER, and at the Custom House and Post Office, VICTORIA. (Appendix No. 2, pages 42 and 43).

### HARBOURS AND RIVERS.

Expenditure during the fiscal year, \$60,849.60.

**BIGG'S PORTAGE.**—The channel opened in 1887, through the neck of land, known as Bigg's Portage, was widened and deepened, and its usefulness increased thereby.

**THE COLUMBIA RIVER.**—To improve the navigation of this river a channel has been scraped through the salmon beds, just below the lower lake, stone and brush-dams have been built where required, and wing-dams constructed at the widest and shallowest points, and at bends, to confine the water and cause a scour. Many snags and other obstructions were removed.

**THE COQUITLAM.**—Jams and accumulations of trees and driftwood caused the river to overflow, and adjacent lands were thereby damaged. These were removed with satisfactory results.

**ESQUIMALT DRY DOCK.**—The electric light apparatus has been completed, a lathe and drill supplied for repairs, a small centrifugal pump substituted for the auxiliary and drainage pump. Additional latrines and proper houses for the fire-hose carts have been built, and other necessary work done.

The dock was fully occupied. Two of Her Majesty's ships—the "Cormorant" and the "Icarus," the U. S. lighthouse tender "Margarita," one ship, three barques, one schooner and ten steamers having been docked and repaired.

**THE FRASER.**—The work of improving the navigation of this important river by the construction of dams to deflect the current into the main channel has been continued and has proved successful. The north channel has been both straightened and deepened thereby, and it is anticipated that there will soon be a continuous depth of 19 feet, at low water springs, through the banks. The snag boat "Samson" removed a number of snags and jams from the river.

**HARRISON RIVER.**—A number of guide piles were driven, to assist vessels in passing through the draw of the railway bridge.

**NICOL ROCK—Nanaimo Harbour.**—The removal of this rock, which was a source of danger to shipping, was commenced in 1887, since which time work has been actively carried on. Up to 30th June last more than two-thirds of the area of the rock within the 16 feet contour line has been broken up, and 1,800 tons of material removed and landed.

**THE NICOMEKEL.**—A small amount has been expended in the removal of snags and other work to the eastward of the Clover Valley Road, thus permitting small boats and scows to get nearly up to Langley Prairie.

**THE SERPENTINE.**—The ditch, which was cut in 1887-88, and to which reference was made in my report of last year, has been enlarged to double its former capacity, and has proved of much benefit.

**THE SOMAS.**—During the past year 47 snags were removed from the channel of the river, and many overhanging trees were cut away between the mouth and the landing, which have increased the facilities for navigation; and the remains of an old mill dam near Sproat's Lake, which caused the adjoining lands to be overflowed, were removed.

**VICTORIA HARBOUR.**—The entrance to this harbour is very narrow, with a sharp turn after passing the lighthouse, due to a shoal extending from Shoal Point. During the year the compact mass of boulders forming this shoal was operated on first by dynamite, and then by a heavy rake, after which the dredge "Pacific" was able to work freely through the shoal.

The work done has resulted in deepening and straightening the channel, and soon the "red" buoy marking the right side of the channel coming in will be shifted, when there will be a channel 300 feet in width, with an easy turn, and an almost straight course from the lighthouse to the wharves in front of the city, having a depth of not less than 14 feet at low water, spring tides, which have a range of 10 feet, there being at the entrance to the harbour a depth of 21 feet at high water, neap tides, 23 feet at ordinary spring tides, and 24 feet at the extraordinary tides which occur in December. (Appendix No. 5, pages 107, 111 and 118).

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### DREDGES.

A report on the operations of the various dredges, together with a list of the dredging plant belonging to the Department, will be found in Appendix No. 5, pages 112 and 123.

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### ENGINEERS, ENGINEMEN, FIREMEN AND CARETAKERS.

A list of the various engineers, &c., employed in the Public Buildings throughout the Dominion, with salaries paid them, &c., will be found in Appendix No. 3, pages 46, 47, 48.

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### DOMINION BUILDINGS.

The amounts expended in connection with heating, lighting and water of the various Public Buildings throughout the Dominion will be found in Appendix No. 1, pages 10 and 13.

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### PUBLIC BUILDINGS, OTTAWA.

The heating, electric lighting, gas, water and bell services of the various Public Buildings in Ottawa were efficiently maintained, ordinary maintenance—only—as a rule, being required. (Appendix No. 4, pages 51 and 52).

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### SURVEYS AND EXAMINATIONS.

Surveys and examinations were made at 99 places, a list of which will be found in Appendix No. 5, page 111.

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### SLIDES AND BOOMS.

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#### SAGUENAY DISTRICT.

The slide and booms to facilitate the descent of timber from Lake St. John to the River Saguenay are situated on La Petite Décharge, the smaller of the two outlets from the lake to the river. The slide is 5,840 feet long, and the booms 1,344 feet.

Dam No. 3 was rebuilt, and the anchor pier at the head of the slide lengthened 91 feet. The main boom and slide-master's house were repaired. (Appendix No. 8, page 137).

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### ST. MAURICE DISTRICT.

The works on the St. Maurice are situated at seven stations, from the mouth of the river to La Tuque Falls, a distance of 100 miles; and there are also two stations on the Vermillion River, a tributary of the St. Maurice.

Although the river remained at a high level for a longer period than usual, the works were not seriously damaged, owing to a large force of men being kept constantly employed. The quantity of logs brought down the river was about the same as last year. The usual necessary repairs were effected to the works at the different stations. (Appendix No. 9, pages 141 and 142).

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### OTTAWA DISTRICT.

This district embraces the River Ottawa and its tributaries, the Gatineau, Madawaska, Coulonge, Black, Petewawa and Dumoine Rivers. There are on it eighty three stations, and the works for facilitating the descent of timber aggregate about one mile of canal, over three miles of slides, nearly thirteen miles of booms and over seventeen thousand lineal feet of dams, with bulkheads, piers, glance piers, &c., in proportion.

During the summer months of 1888 the waters of the main river and the streams falling into it, although low, were at a fair pitch for driving; but later in the season, portions of the timber and sawlogs were stuck, and had to be abandoned until the water rose. In all 127,923 pieces of timber and 3,725,386 sawlogs were brought down, the revenue derived from the same being \$84,709.39.

A description of work done at the various stations will be found in Appendix No. 10, pages 145-149.

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### NEWCASTLE DISTRICT.

The works in this district are of two classes: those connected with navigation, which are under the control of the Department of Railways and Canals, and those constructed to facilitate the descent of timber down the River Trent and its tributaries, which are under the control of this Department.

During the season of 1888 the water stood at its average height. This spring it was low, but through the care taken of the water in the reservoirs, and the heavy rains of May and June, the lumbermen experienced little difficulty with their drives.

A description of the works executed at the different stations will be found in Appendix No. 11, pages 153 and 154.

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### STAFF EMPLOYED ON SLIDES AND BOOMS.

A list of the staff employed on the different slides and booms, with date of appointment, salary, &c., will be found in Appendix No. 12, pages 156-158.

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### BRIDGES.

**BATTLEFORD BRIDGE.**—No progress was made by the contractors, beyond arranging for materials.

**CHAUDIÈRE BRIDGE.** The suspension bridge at the Chaudière Falls having become inadequate for the large amount of traffic passing over it, in November 1888, a contract was entered into for the construction of an iron and steel truss bridge, 236 feet in length and 45 feet in width, from outside to outside, giving a clear roadway of 30 feet and two foot paths, one on each side, of 5 feet.

At the close of the fiscal year the contractors were engaged in erecting the false works, and in the delivery of materials for the new structure.

**PORTAGE DU FORT BRIDGE.**—The superstructure of the bridge crossing a branch of the Ottawa, at the village of Portage du Fort, has been entirely rebuilt.

### TELEGRAPHS.

The various lines owned and operated by the Government, or on behalf of the Government were maintained in a state of efficiency during the year.

The Meat Cove Line was further renewed, and a loop of 5 miles constructed from the Mabou-Cheticamp line to North East Margaree. The line on the north shore of the St. Lawrence was extended from Birch River to Sheldrake, and the cables of the Grosse Ile Quarantine system were taken up and replaced by cables of a heavier type. In August, 1888, Point Pelée was connected with Pelée Island, Lake Erie, by a cable  $8\frac{3}{4}$  miles in length, and connection was made with Leamington, the line being equipped with telephones. Two short sections of cable were laid to connect Wolfe and Howe Islands with Kingston by telephone. The re-poling of the Qu'Appelle-Humbolt line has been completed, as was that of the Prince Albert line, and a loop line was built to Batoche. The line between Clark's Crossing and Saskatoon, 14 miles in length, has been assumed by the Government, and now forms part of the system in the North-West Territories. A telephone system was established between the Mounted Police Barracks and the Government offices at Banff. A line from Victoria to Cape Beale, a distance of about 115 miles, is now in course of construction along the south shore of Vancouver Island. Full details, with tables giving distances, names of operators and salaries paid on the different lines, will be found in the report of the Superintendent of Government Telegraph Lines. (Appendix 13, pages 161-180).

### SHIP CHANNEL BETWEEN MONTREAL AND QUEBEC.

The work of deepening to  $27\frac{1}{2}$  feet the channel in the St. Lawrence between Montreal and Quebec was continued by the Harbour Commissioners of Montreal to the 31st December, 1888, after which date it was assumed and has been carried on by the Department. A description of the work done from 1st July to 31st December, 1888, will be found in Appendix No. 6, pages 127-130.

### QUEBEC HARBOUR IMPROVEMENTS.

The report of the Harbour Commissioners of Quebec on the works under their charge will be found in Appendix No. 7, page 133.

## OPENING AND CLOSING OF NAVIGATION.

Appendix No. 14, pages 183–184, gives a statement of the dates of the closing of navigation in the winter of 1888, and of the opening in 1889, at the principal ports of Canada. A list of the ports which are always open is also given.

## NATIONAL ART GALLERY.

Some additions have been made to the pictures during the year, and the curator reports a steady increase in the number of visitors. (Appendix 17, page 203.)

## CONTRACTS, PROPERTY PURCHASED, &c.

Appendix No. 15, pages 187–192, contains statements of the contracts entered into by the Department, of property purchased by the Department, and of property leased by or to the Department, during the fiscal year.

## ACTS RELATING TO PUBLIC WORKS

Appendix No. 16, page 199, contains a list of some of the Public Acts of the Parliament of Canada, passed at the Session of 1889, and having reference to the Public Works Department, or works under its charge.

## DEPARTMENTAL STAFF.

In appendix No. 18, pages 206 and 207, will be found a list of the Members, Commissioners, and Assistant Commissioners of the Board of Works of the Province of Canada from 1841 to 1867; and of the Ministers, Deputy Ministers, Secretaries, Chief Engineers and Chief Architects of the Department of Public Works, from Confederation to 30th June, 1889.

## OFFICIAL CORRESPONDENCE.

Appendix No. 20, page 247, contains a statement of the official correspondence of the Department from 1867 to 30th June, 1889, as well as that of the principal officers of the Department.

## GRAVING DOCKS.

There are at present three graving, or dry docks, opened for the reception and repairs of ocean-going steamers and vessels, viz. at Halifax, Nova Scotia; Levis, Quebec; and Esquimalt, British Columbia, while a fourth, to accommodate vessels engaged in the lake trade, is under construction at Kingston, Ontario. Their dimensions are as follows:—

### HALIFAX :

	Feet.
Length.....	585
Width at coping level.....	102
do bottom.....	72
do entrance.....	95½
Depth of water on sill at ordinary spring tides.....	30
(Spring tides rise 6 feet, neaps 3 feet.)	



**LEVIS :**

	Feet.
Length.....	495
Width at coping level.....	100
do bottom.....	73
do entrance.....	62
Depth of water on sill at H.W. ordinary spring tides.....	25½
do do neap tides.....	20½

**ESQUIMALT DOCK :**

	Feet.
Length.....	430
Width at bottom.....	41
do coping level.....	90
do entrance.....	65
Depth of high water on sill at high water ordinary springs.....	26½
(Spring tides rise 7 to 10 feet, neaps 5 to 8 feet.)	

**KINGSTON DOCK .**

When completed, this dock will be of the following dimensions:—

	Feet.
Length on the floor.....	280
Width do .....	40
Width at coping level.....	72
Depth from coping to floor.....	26
Depth of water on sill at low water.....	15½
Width of entrance.....	48

**ENGINEERS AND ASSISTANTS.**

Appendix No. 19, pages 209, 247, contains a revised record of engineers and their assistants employed on Public Works of Canada from 1779 to 1890.

**COLLECTION OF SLIDE AND BOOM DUES.**

Appendix No. 21, pages 250, 251, contains a statement of amounts owing for slide and boom dues in the Ottawa District on 1st December, 1889; also, amounts due by insolvent parties which cannot be recovered.

HECTOR L. LANGEVIN.

*Minister of Public Works.*

OTTAWA JANUARY, 1890.



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# APPENDICES.

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APPENDIX No. 1.

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STATEMENT OF EXPENDITURE

DURING FISCAL YEAR ENDED 30th JUNE, 1889.

BY

O. DIONNE, ACCOUNTANT.

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(Reference No. 104,040.)

## APPENDIX No. 1.

STATEMENT showing the Amount expended by the Department of Public Works,  
Dominion of Canada, during the Fiscal Year ended 30th June, 1889.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
<b>PUBLIC BUILDINGS.</b>				
GENERALLY.....			11,331 33	11,331 33
<i>Nova Scotia.</i>				
Amherst Post Office, &c.....	176 05	187 72		363 77
Annapolis do .....	4,134 69			4,134 69
Antigonish do .....	641 85	203 28		845 13
Arichat do .....		48 55		48 55
Baddeck do .....		278 53		278 53
Halifax Dominion Building.....	788 78	100 00		888 78
do Examining Warehouse.....	691 66	1,000 00		1,691 66
do Immigration Office.....		257 29		257 29
do Penitentiary.....		0 24		0 24
do Quarantine Station.....		1,268 31		1,268 31
Nappan Experimental Farm.....	11,218 44			11,218 44
New Glasgow Post Office, &c.....	150 00	401 00		551 00
North Sydney do .....	576 97	130 27		707 24
Pictou Marine Hospital.....	187 50			187 50
do Post Office, &c.....		258 80		258 80
Sydney (South) Post Office, &c.....	1,589 92			1,589 92
Truro Post Office, &c.....		34 58		34 58
Windsor do .....		20 00		20 00
Yarmouth do .....	607 00	483 64		1,090 64
<i>Prince Edward Island.</i>				
Charlottetown Dominion Building (new).....	1,267 32	119 00		1,386 32
Montague Post Office, &c.....	21 10	135 31		156 41
Summerside do .....	233 25	36 19		269 44
<i>New Brunswick.</i>				
Bathurst Post Office, &c.....	1,998 44			1,998 44
Carleton (St. John) Post Office.....		73 33		73 33
Chatham Post Office.....		118 98		118 98
Dalhousie Post Office, &c.....	6,051 55			6,051 55
Dorchester Penitentiary.....	42 74	500 00		542 74
Fredericton Post Office, &c.....		1,132 17		1,132 17
Kingston Marine Hospital.....		1 80		1 80
Moncton Post Office, &c.....		477 03		477 03
Newcastle do .....	57 50	87 90		145 40
Portland (St. John) Post Office.....		133 96		133 96
St. Andrew's Savings Bank.....		22 50		22 50
St. John Custom House.....	2,267 04	1,107 44		3,374 48
do Marine Hospital.....	681 32	454 90		1,136 22
do Penitentiary.....		17 21		17 21
do Post Office.....	329 56	480 14		809 70
do Savings Bank.....	262 11	99 18		361 29
St. Stephen's Post Office, &c.....		11 80		11 80
Sussex do .....		213 00		213 00
Woodstock do .....	3,052 00	5 70		3,057 70
Carried forward.....	37,026 79	9,899 75	11,331 33	58,257 87

APPENDIX No. 1—*Continued.*

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	37,026 79	9,899 75	11,331 33	58,257 87
<b>PUBLIC BUILDINGS—Continued.</b>				
<i>Quebec.</i>				
Aylmer Post Office, &c.....	9,963 08			9,963 08
Chicoutimi Marine Hospital.....		1,282 09		1,282 09
Coaticook Post Office, &c.....	23,522 57			23,522 57
Grosse Isle Quarantine Station.....	2,230 13			2,230 13
Hull Post Office, &c., (new).....	930 72	3 85		934 57
Joliette Post Office, &c.....	13,803 06			13,803 06
Lachine do.....	2,108 40			2,108 40
Montreal Armouries.....	28,671 66			28,671 66
do Civil Service Examination Office.....		154 00		154 00
do Custom House.....	5,111 90	4,724 85		9,836 75
do Drill Hall.....	18,365 48	108 85		18,474 33
do Examining Warehouse.....	521 55	442 47		964 02
do Inland Revenue Building.....	696 00	494 21		1,190 21
do Post Office.....	5,953 49	9,780 36		15,733 85
do do —electric lighting.....			719 92	719 92
Quebec Citadel Buildings.....		3,614 29		3,614 29
do Citadel Cliff.....	1,279 64			1,279 64
do Clerk of Works' Office.....		665 09		665 09
do Cullers' Office.....		143 66		143 66
do Custom House (old).....		20 00		20 00
do do.....	3,256 49	24 10		3,280 59
do Drill Hall.....	1,964 26			1,964 26
do Examining Warehouse.....	739 38	45 60		784 98
do Immigrant Building.....	7,693 56			7,693 56
do Marine Hospital.....		2,959 34		2,959 34
do Observatory.....	340 46			340 46
do Old Parliament Building.....		398 01		398 01
do do site.....	76,296 22			76,296 22
do Post Office.....		3,363 28		3,363 28
do Queen's Wharf Buildings.....	1,454 05	219 30		1,673 35
Rivière du Loup (Fraserville) Post Office.....	3,570 65			3,570 65
Sherbrooke Post Office, &c.....	594 18	42 50		636 68
Sorel Post Office, &c.....	839 23	66 55		905 78
St. Hyacinthe Post Office, &c.....	4,250 23			4,250 23
St. Jérôme do.....	10,471 44			10,471 44
St. John's do.....		364 60		364 60
St. Régis Custom House.....		290 00		290 00
St. Vincent de Paul Penitentiary.....	33,864 19			33,864 19
Three Rivers Custom House.....	885 81	251 44		1,137 25
do Post Office.....	422 52	155 20		577 72
<i>Ontario.</i>				
Almonte Post Office, &c.....	6,666 98			6,666 98
Amherstburg Post Office, &c.....		46 15		46 15
Barrie do.....	2,762 41			2,762 41
Belleville do.....	637 04	52 75		689 79
Berlin do.....		90 62		90 62
Brampton do.....	10,527 17			10,527 17
Brantford do.....	229 02	109 23		338 25
Brockville do.....	23 75	67 45		91 20
Cayuga do.....	9,140 90			9,140 90
Chatham do.....	245 37	276 71		522 08
Clifton do.....		13 78		13 78
Cobourg do.....	5,750 34	15 00		5,765 34
Cornwall do.....		178 06		178 06
Carried forward.....	332,810 12	40,363 14	12,051 25	385,224 51



## APPENDIX No. 1.—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	332,810 12	40,363 14	12,051 25	385,224 51
<b>PUBLIC BUILDINGS—Continued.</b>				
<i>Ontario—Continued.</i>				
Dundas, Post Office, &c.....		500 00		500 00
Galt do do.....		204 90		204 90
Gananoque do.....	7,195 95			7,195 95
Goderich do.....	6,599 88			6,599 88
Guelph do.....	1,932 46	21 22		1,953 68
Hamilton Custom House.....		72 00		72 00
do Drill Hall.....	23,633 44			23,633 44
do Post Office.....	557 34	525 81		1,083 15
Kingston Civil Service Examination Office.....		18 45		18 45
do Custom House.....	1,493 91	724 57		2,218 48
do Military College.....		38 00		38 00
do Penitentiary.....	22,244 87			22,244 87
do Post Office.....		331 78		331 78
Lindsay Post Office, &c.....	14,599 19			14,599 19
London Custom House.....	11,796 09	16 40		11,812 49
do Infantry School.....	11,560 63	70 00		11,630 63
do Post Office, &c.....	330 19	416 31		746 50
Napanee do.....	24,315 55			24,315 55
Orangeville do.....	30 76	25 06		55 82
Ottawa Examining Warehouse.....		850 00		850 00
do Experimental Farm.....	64,650 33			64,650 33
do Geological Museum.....		390 75		390 75
do do do Gas.....			699 40	699 40
do National Art Gallery.....			1,000 97	1,000 97
do Post Office, &c.....	832 50	165 40		997 90
do do Gas.....			1,770 40	1,770 40
do Printing Bureau.....	122,534 86			122,534 86
do do Gas.....			1,318 10	1,318 10
do do Heating.....			981 36	981 36
do do (temporary).....		587 50		587 50
do Public Buildings.....		118,372 10		118,372 10
do do Gas.....			15,777 88	15,777 88
do do Grounds.....			8,293 55	8,293 55
do do Heating.....			61,177 83	61,177 83
do do Major's Hill Park.....			7,550 61	7,550 61
do do Recovering lean-to Roofs.....	5,920 00			
do do Ventilating Shafts.....	800 00			
do do Skylights.....	771 25			
do do Pump House.....	149 00			
do do Removal of Snow.....			991 73	991 73
do do Telephonic Service.....			2,844 02	2,844 02
do do Water.....			13,728 60	13,728 60
do do Wellington Street Block.....	132,151 27			132,151 27
do Supreme Court.....		50 50		50 50
do Victoria Hall.....	1,000 00	3,848 19		4,848 19
Pembroke Post Office, &c.....	9,094 31			9,094 31
Peterborough do.....	2,204 56	22 35		2,226 91
Port Arthur Custom House.....		194 00		194 00
do Inland Revenue Office.....		199 82		199 82
Port Colborne Post Office, &c.....		180 25		180 25
Port Hope do.....	21 50	156 25		177 75
Prescott do.....	8,027 00			8,027 00
Rideau Hall.....		31,518 31		31,518 31
do Gas—New Edinburgh Street Lamps.....			300 00	300 00
do Allowance for fuel and light.....			8,000 00	8,000 00
do Removal of Snow.....			617 00	617 00
Carried forward.....	807,256 96	199,863 06	137,102 70	1,144,222 72

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward	807,256 96	199,863 06	137,102 70	1,144,222 72
<b>PUBLIC BUILDINGS—Continued.</b>				
<i>Ontario—Concluded.</i>				
St. Catharines Post Office, &c.	526 39	1 00		527 39
St. Thomas do	904 16			904 16
Stratford do		153 00		153 00
Strathroy do	2,611 93			2,611 93
Toronto Civil Service Examination Office		105 47		105 47
do Custom House	1,561 41	17 18		1,578 59
do Examining Warehouse	4,115 84	690 08		4,805 92
do Immigrant Station	14 66	293 46		308 12
do Inland Revenue Office		24 25		24 25
do Post Office	4,307 72	509 61		4,817 33
Trenton do &c.	18,640 45			18,640 45
Windsor do	1,508 29	7 65		1,515 94
<i>Manitoba.</i>				
Brandon Experimental Farm	4,202 78			4,202 78
do Immigrant Building	153 40	116 00		269 40
do Post Office	6,722 00			6,722 00
Stony Mountain Penitentiary	53,435 84			53,435 84
St. Paul Industrial School	9,222 10			9,222 10
Winnipeg Architect's Office		1,592 56		1,592 56
do Custom House		122 35		122 35
do Dominion Lands Office		1,141 42		1,141 42
do Examining Warehouse		809 49		809 49
do Immigrant Building	47 16	590 00		637 16
do Post Office		335 03		335 03
<i>North-West Territories.</i>				
Banff Mounted Police Barracks	380 35			380 35
Battleford Land and Registry Office	1,999 64			1,999 64
do Mounted Police Barracks	8,509 32			8,509 32
Big Bend do do	411 12			411 12
Calgary Clerk of Work's Office		98 85		98 85
do Court House, Jail, Registry Office, &c.	10,258 90			10,258 90
do Custom House		81 50		81 50
do Mines Office		393 03		393 03
do Mounted Police Barracks	25,856 02			25,856 02
Fort McLeod Custom House		380 80		380 80
do do and Store house	2,013 11			2,013 11
do Mounted Police Barracks	8,906 03			8,906 03
Fort Saskatchewan do	200 00			200 00
Indian Head Experimental Farm	14,337 50			14,337 50
Kipp Mounted Police Barracks	979 93			979 93
Lethbridge do	4,543 31			4,543 31
Maple Creek do	917 34			917 34
Medicine Hat do	127 59			127 59
Milk River do	121 66			121 66
Pendant d'Oreille do	291 90			291 90
Prince Albert Court House	3,541 33	227 89		3,769 22
do Mounted Police Barracks	5,658 43			5,658 43
Public Buildings generally		1,443 48		1,443 48
Qu'Appelle Immigrant Shed		10 60		10 60
do Industrial School	11,562 49			11,562 49
Regina Clerk of Works' Office		886 86		886 86
Carried forward	1,015,847 06	209,894 62	137,102 70	1,362,844 38

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	1,015,847 06	209,894 62	137,102 70	1,362,844 38
<b>PUBLIC BUILDINGS—Continued.</b>				
<i>North-West Territories—Concluded.</i>				
Regina Council Chamber .....		578 00		578 00
do Court House.....	333 50	189 81		523 31
do Industrial School.....	4,872 54			4,872 54
do Jail and Lunatic Asylum.....	1,887 53	169 88		2,057 41
do Lieut.-Governor's Residence, (old).....	2,549 89	2,594 03		5,143 92
do do do (new).....	2,651 54			2,651 54
do Mounted Police Barracks.....	9,269 52			9,269 52
do Post Office.....		215 85		215 85
do Riding Hall.....	15,301 14			15,301 14
St. Albert Mounted Police Barracks.....	642 42			642 42
St. Mary's do .....	1,155 83			1,155 83
Wood Mountain do .....	1,155 90			1,155 90
Writing-on-Stone do .....	291 90			291 90
<i>British Columbia.</i>				
Agassiz Experimental Farm.....	72 05			72 05
Kamloops Industrial School.....	65 66			65 66
Kuper Island do .....	3,055 59			3,055 59
Nanaimo Post Office, &c.....		72 12		72 12
New Westminster Penitentiary.....	8,041 55			8,041 55
do Post Office.....		295 74		295 74
Vancouver Post Office, &c.....	4,154 36			4,154 36
Victoria Custom House.....		121 55		121 55
do Post Office.....		1,220 46		1,220 46
<i>England.</i>				
London, High Commissioner's House.....	964 57			964 57
Carried forward .....	1,072,312 55	215,352 06	137,102 70	1,424,767 31

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.		Repairs.	Staff and Main- tenance.	Total.	
	\$ cts.		\$ cts.	\$ cts.	\$ cts.	
PUBLIC BUILDINGS—Continued.						
Brought forward.....	1,072,312 55		215,352 06	137,102 70	1,424,767 31	
	Salaries of Engineers, &c.	Supplies for En- gineers, &c.	Heating.	Lighting.	Water.	Total.
EXPENDITURE ON ACCOUNT SERVICES MENTIONED.						
Nova Scotia.						
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Amherst Post Office.....	433 33	26 61	479 04	132 55		1,071 53
Antigonish do .....	45 00		67 50			112 50
Arichat do .....	15 00		95 00			110 00
Baddeck do .....	200 00		98 00	25 64		323 64
Halifax Dominion Building	2,196 96	32 32	635 10	1,968 28	650 00	5,482 66
do Exam. Warehouse	500 00		4 80	19 00	284 85	808 65
do Penitentiary .....	112 50		18 60	8 40		139 50
New Glasgow Post Office..	399 99	45 00	151 00	235 09	133 33	964 41
North Sydney do .....	433 31		185 00			618 31
Pictou Custom House .....	400 00	0 70	149 33			550 03
do Marine Hospital .....			61 72			61 72
Truro Post Office.....	399 99	7 26	194 50	223 47	15 00	840 22
Windsor do .....	400 00		226 68	105 30	50 00	781 98
Yarmouth Post Office, &c.	400 00	2 49	200 00	535 36	72 00	1,209 85
Prince Edward Island.						
Charlottetown Dominion Building.....	1,579 96	110 19	551 78	1,623 18	27 00	3,892 11
Montague Post Office.....	129 00		74 87	11 67		206 54
Summerside do .....	400 00	12 94	297 91	52 30		763 15
New Brunswick.						
Bathurst Post Office, &c..	400 00	4 80	401 01	24 96		830 77
Carleton, St. John, Post Office, &c.....				150 00	20 00	170 00
Chatham Post Office, &c..			149 03	64 90		213 93
Fredericton do .....	400 00	8 35	393 57	456 12	33 00	1,291 04
Moncton Post Office .....	400 00	18 09	265 93	706 31	134 00	1,524 33
Newcastle do .....	400 00	59 48	424 49	214 20		1,098 17
Portland do .....			30 44	15 21		45 65
St. John Custom House..	1,715 80	45 78	1,905 19	165 97	457 87	4,290 61
do Marine Hospital			507 33	312 60	30 58	850 51
do Penitentiary .....	412 50		49 60	6 25		468 35
do Post Office.....	1,195 85	3 26	606 93	1,973 79	351 13	4,130 96
do Savings Bank.....			231 25	94 45	70 00	395 70
St. Stephen's Post Office, &c	400 00	15 32	81 00	501 90	51 75	1,049 97
Sussex do .....	400 00	2 01	221 57	20 20		643 78
Woodstock do .....	400 00	8 40	235 17	42 00	34 00	739 57
Quebec.						
Hull Post Office, &c.....	200 00		284 21	36 80	89 00	610 01
Montreal Armouries.....	225 00					225 00
do Custom House .....	930 00		1,233 43	572 65	375 35	3,111 43
do Drill Hall .....	323 75					323 75
do Examining Ware- house.....	1,257 42		1,903 20	462 04	450 00	4,072 66
do Inland Revenue Office.....	730 00		335 51	151 85	96 90	1,314 26
Carried forward.....	17,826 36	403 00	12,769 69	10,912 44	3,425 76	45,337 25

APPENDIX No. 1—*Continued.*

Name of Work.				Con- struction.	Repairs.	Staff and Main- tenance.	Total.
PUBLIC BUILDINGS—Continued.				\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....				1,072,312 55	215,352 06	137,102 70	1,424,767 31
EXPENDITURE ON ACCOUNT SERVICES MENTIONED—Con.	Salaries of Engineers, &c.	Supplies for En- gineers, &c.	Heating.	Lighting.	Water.	Total.	
Quebec—Concluded.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	
Brought forward...	17,826 36	403 00	12,769 69	10,912 44	3,425 76	45,337 25	
Montreal Post Office, St. Jacques St.....	1,195 00	0 60	1,231 27	3,451 07	1,639 45	7,517 39	
Montreal Post Office, Notre Dame St.....				0 45		0 45	
Montreal Post Office, St. Catherine St.....				2 85	8 00	10 85	
Montreal Post Office, St. Lawrence St.....				2 05		2 05	
Quebec Citadel Buildings.	22 25		166 50	264 78		453 53	
do Culler's Office.....	540 00					540 00	
do Custom House.....	300 00	9 85	937 65	27 68	30 00	1,305 18	
do Examining Ware- house.....	1,070 00	25 55	1,026 31	24 00	300 00	2,445 86	
do Marine Hospital.....			1,375 00			1,375 00	
do Observatory.....					46 00	46 00	
do Post Office.....			378 88	609 84		988 72	
Sherbrooke Post Office, &c.	400 00	21 50	327 50	560 25	50 00	1,359 25	
Sorel do.....	400 00	85 01	338 50	205 50	250 00	1,279 01	
St. Johns do.....	350 00	3 23	188 00	22 24	80 00	643 47	
St. Vincent de Paul Peni- tentiary.....	46 00		2,013 22	28 20		2,087 42	
Three Rivers Custom House.....	816 66		397 10		72 76	1,286 52	
Three Rivers Post Office..	400 00	15 49	223 62	218 50	60 00	917 61	
Ontario.							
Amherstburg Post Office, &c.....	366 67	32 60	279 25	44 40		722 92	
Barrie Post Office, &c.....	400 00	38 30	316 38	208 20	50 00	1,012 88	
Belleville do.....	600 00	26 35	391 75	518 36	21 75	1,558 21	
Berlin do.....	400 00	9 14	226 62	163 75	5 00	804 51	
Brantford do.....	600 00	7 79	290 14	319 40		1,217 33	
Brockville do.....	400 00	29 56	276 00	597 50	170 00	1,473 06	
Chatham do.....	850 00	8 50	247 65	257 99		1,364 14	
Clifton do.....	400 00	16 95	292 00	38 48	23 76	771 19	
Cobourg Inland Revenue..	15 00					15 00	
do Post Office.....	150 00			101 05		251 05	
Cornwall do.....	365 00	13 65	273 20	418 83	45 00	1,115 68	
Dundas do.....			33 00	49 48		82 48	
Galt Post Office.....	400 00	4 00	223 33	171 60	12 00	810 93	
Gananoque Custom House			150 00			150 00	
do Post Office.....	16 66		42 00			58 66	
Guelph do.....	400 00	16 75	88 93	305 60	37 44	848 72	
Hamilton Custom House..	591 67	12 53	98 75	119 98		822 93	
do Drill Shed.....	108 00	12 25	92 50			212 75	
do Post Office.....	790 03		994 00	1,590 24	3,377 36	6,751 63	
Kingston Canal Tolls Office					12 00	12 00	
do Custom House.....			297 00	116 40	80 80	494 20	
Carried forward.....	30,219 30	792 60	25,985 74	21,351 11	9,797 08	88,145 83	

## APPENDIX No. 1—Continued.

Name of Work.				Con- struction.	Repairs.	Staff and Main- tenance.	Total.
PUBLIC BUILDINGS—Continued.				\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....				1,072,312 55	215,352 06	137,102 70	1,424,767 31
EXPENDITURE ON ACCOUNT SERVICES MENTIONED—Con.	Salaries of Engineers, &c.	Supplies for En- gineers, &c.	Heating.	Lighting.	Water.	Total.	
Ontario—Concluded.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	
Brought forward...	30,219 30	792 60	25,985 74	21,351 11	9,797 08	88,145 83	
Kingston Exa. Warehouse					3 00	3 00	
do Inland Revenue Office.....				60 80	31 21	92 01	
do Military College.	1,440 00					1,440 00	
do Penitentiary....	1,100 00					1,100 00	
do Post Office.....		1 80	90 00	343 60	52 70	488 10	
London Custom House....	900 00	35 00	1,121 56	190 85	78 80	2,326 21	
do Post Office.....	600 00	5 25	582 51	530 75	36 00	1,754 51	
Orangeville Post Office....	400 00	10 71	163 45	121 38		695 54	
Ottawa Experimental F'm.			191 60			191 60	
do National Art Gal'y		3 25				3 25	
do Printing Bureau....				2 70		2 70	
Peterboro' Post Office....	400 00		153 68	163 10	98 75	815 53	
Port Colborne Post Office.	190 00	56 22	148 70	28 39		423 31	
Port Hope do.....	400 00	15 93	197 00	211 50		824 43	
Stratford Post Office, &c..	600 00	12 55	302 85	313 20	63 00	1,291 60	
St. Catharines do.....	400 00	18 14	325 98	161 45	51 00	956 57	
St. Thomas do.....	400 00	26 89	364 00	412 49	38 82	1,242 20	
Toronto Custom House....			573 23	130 11	261 03	964 37	
do Examining Ware- house.....	3,956 28	22 98	945 28	30 63	70 00	5,025 17	
do Inland Revenue Office.....	646 50		348 36	245 63	148 75	1,389 24	
do Post Office.....	1,878 50		722 71	2,302 81	634 10	5,538 12	
Windsor Post Office, &c..	1,000 00	12 85	491 25	618 63	145 34	2,268 09	
Manitoba.							
Winnipeg Custom House....			870 50	191 10	45 60	1,107 20	
do Dominion Lands Office.....			656 40	18 00		674 40	
do Examining Warehouse.....			408 00	4 20		412 20	
do Immigrant Shed.....			224 40			224 40	
do Post Office.....	2,749 75	151 24	2,366 25	828 30	571 60	6,667 14	
North-West Territories.							
Calgary Clerk of Works' Office.....			40 00			40 00	
do Mine Office.....			96 00			96 00	
McLeod Custom House....			151 75			151 75	
Prince Albert Court House &c.....	400 00	8 25	183 08	10 60		601 93	
Regina Court House.....			538 60	23 32	19 00	580 92	
Carried forward....	47,680 33	1,173 66	38,242 88	28,294 65	12,145 80	127,537 32	.....

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
<b>PUBLIC BUILDINGS—Concluded.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>
Brought forward.....	1,072,312 55	215,352 06	137,102 70	1,424,767 31

EXPENDITURE ON ACCOUNT SERVICES MENTIONED—Con.	Salaries of Engineers &c.	Supplies for En- gineers, &c.	Heating.	Lighting.	Water.	Total.
<i>N.-W. Territories—Con.</i>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>
Brought forward.....	47,180 33	1,173 66	38,242 58	28,294 65	12,145 80	127,537 32
Regina Jail and Lunatic Asylum.....			88 40			88 40
do Post Office.....			355 45			355 45
<i>British Columbia.</i>						
Nanaimo Post Office.....	600 00			149 65	33 00	782 65
New Westminster Post Office.....	600 00		155 82	122 15		877 97
Victoria Custom House.....			137 50			137 50
do Post Office.....			230 25	887 30	42 00	1,159 55
DOMINION BUILDINGS GENERALLY.....			1,840 61			1,840 61
Totals.....	48,880 33	1,173 66	41,050 91	29,453 75	12,220 80	132,779 45
				1,072,312 55	215,352 06	269,882 15
						1,557,546 76

## HARBOURS AND RIVERS.

## Nova Scotia.

Arisaig.....	149 37			149 37
Barrington Passage Pier.....	2,990 80			2,990 80
Bayfield Wharf.....	2,441 82			2,441 82
Bayfield.....		2,973 50		2,973 50
Bay St. Lawrence.....	1,997 09			1,997 09
Beaver River.....	1,499 56			1,499 56
Betty Island.....		499 81		499 81
Big Bras d'Or Wharf.....	2,076 53			2,076 53
Big Pond.....	1,998 33			1,998 33
Blue Rock.....	3,816 50			3,816 50
Birchtown Brook.....		200 00		200 00
Broad Cove.....	6,320 00			6,320 00
Brule.....		549 44		549 44
Cheticamp.....	2,043 79			2,043 79
Comeauville.....	4 00			4 00
Cow Bay.....	9,906 38			9,906 38
Delap's Cove.....	999 97			999 97
Digby.....	4,498 14			4,498 14
East River of Pictou.....	700 00			700 00
East Bay.....		399 58		399 58
Eatonville.....	4,877 02			4,877 02
Economy Breakwater.....	301 79			301 79
Gabarus—Belfry Lakes Channel.....	800 00			800 00
Green Cove.....		497 33		497 33
Carried forward.....	1,119,733 64	220,471 72	269,882 15	1,610,087 51

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward....	1,119,933 64	220,471 72	269,882 15	1,610,087 51
<b>HARBOURS AND RIVERS—Con.</b>				
<i>Nova Scotia—Concluded.</i>				
Green Harbour.....		99 75		99 75
Hampton.....	750 00			750 00
Harbourville.....		100 00		100 00
Jones' Harbour.....		50 00		50 00
Kingsport.....		250 00		250 00
Lismore.....	1,000 00			1,000 00
Little Narrows.....	1,425 00			1,425 00
Lower Horton.....	2,252 28			2,252 28
Mabou Harbour.....	1,000 00			1,000 00
Main-à-Dieu.....		484 39	118 50	602 89
Margaretville.....		370 17		370 17
Meteghan.....	308 75			308 75
McNair's Cove.....		6,865 00		6,865 00
Noël.....	2,998 66			2,998 66
Parker's Cove.....	199 90			199 90
Parrsboro'.....		369 80		369 80
Partridge Island River.....	2,999 86	27 52		3,027 38
Pictou Island.....	1,632 33			1,632 33
Port Greville.....	399 98			399 98
Port Hood.....	3,300 00			3,300 00
Port Lorne.....	200 00			200 00
Roseway Beach.....		100 00		100 00
Round Bay.....		100 00		100 00
Sandford.....		200 00		200 00
Saulniersville.....	1,859 59			1,859 59
Sheet Harbour.....	1,700 46			1,700 46
Spencer's Island Wharf.....	3,111 60			3,111 60
Tatamagouche, Wharf on East Side.....	598 94			598 94
Trout Cove.....		399 79		399 79
Wallace Harbour.....	999 38			999 38
Western Head.....	4,481 95			4,481 95
White Point.....	2,499 46			2,499 46
<i>Prince Edward Island.</i>				
Annandale.....		365 00		365 00
Belfast Pier.....		1,853 79		1,853 79
Campbell's Cove.....		294 24		294 24
Cascumpec.....	3,330 74			3,330 74
Georgetown.....		198 11		198 11
Hickey's Pier.....		539 99		539 99
Lewis Point.....		500 00		500 00
Malpeque.....		871 23		871 23
Murray Harbour.....		51 30		51 30
North Cardigan.....		350 00		350 00
North Rustico.....		248 22		248 22
Pinette.....		99 56		99 56
Pownal.....		439 98		439 98
Souris, Knight's Point.....	4,998 87			4,998 87
South Rustico.....		150 00		150 00
Sturgeon Pier.....		250 00		250 00
Tignish.....		534 22		534 22
Vernon River Pier.....	97 51			97 51
Carried forward.....	1,161,878 90	236,633 78	270,000 65	1,668,513 33



## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward .....	1,161,878 90	236,633 78	270,000 65	1,668,513 33
<b>HARBOURS AND RIVERS.—Con.</b>				
<i>New Brunswick.</i>				
Belliveau Village.....	2,554 70			2,554 70
Campbellton Ballast Wharf.....	132 50			132 50
Cape Tormentine.....	24,042 07			24,042 07
Edgett's Landing.....	188 37			188 37
Grande Anse.....	3,090 37			3,090 37
Hopewell Cape.....		499 86		499 86
Maisonette.....	528 29			528 29
Pointe du Chêne.....	999 46			999 46
Quaco.....		15 00		15 00
Richibucto.....	2,999 54			2,999 54
River Kennebecasis.....	1,896 98			1,896 98
Rocher Bay, Anderson's Hollow.....	1,583 50			1,583 50
Salmon River.....		198 30		198 30
Shippegan.....		700 00		700 00
St John Harbour (Fort Dufferin, retaining wall at Negro Point).....		3,005 00		3,005 00
St John Harbour (Partridge Island).....	1,492 00			1,492 00
St John River.....	5,355 60			5,355 60
do between Fredericton and Woodstock.....	999 58			999 58
do Dredging Oromocto Shoal.....	2,000 00			2,000 00
St Louis.....	1,897 65			1,897 65
Harbours Generally, Maritime Provinces.....			12,098 26	12,098 26
<i>Quebec.</i>				
Anse à l'Eau or Tadoussac Pier.....	1,282 06			1,282 06
Anse St. Jean.....		239 50		239 50
Baie St. Paul.....	4,867 92			4,867 92
Barachois de Malbaie.....	327 00			327 00
Belzil Piers and Booms.....			151 00	151 00
Beauport.....	677 32			677 32
Berthier (en bas).....		1,450 97		1,450 97
Cap à L'Aigle.....		548 81		548 81
Cap Santé.....	252 43			252 43
Carleton Pier.....		28 98		28 98
Cedars Pier.....		48 00		48 00
Chenal du Moine—Ice Piers at Ste Anne de Sorel.....	2,708 28			2,708 28
Chicoutimi.....	1,631 65			1,631 65
Coteau du Lac.....	1,968 34	1,925 07		3,893 41
Coteau Landing Pier.....		1,413 00		1,413 00
Etang du Nord, Magdalen Islands.....	3,753 24			3,753 24
Georgeville.....	661 43			661 43
Grand Pabos.....	750 00			750 00
Harbours and Rivers Generally.....			6,113 08	6,113 08
Ile Perrot.....	3,640 31			3,640 31
Ile Verte.....	3,999 39			3,999 39
Kamouraska.....	220 00			220 00
Lake Megantic.....		873 02		873 02
Lake St. John, Grande Décharge.....	2,112 11			2,112 11
Laprairie, Works in connection with Ice Piers.....	5,027 67			5,027 67
Les Eboulements.....		1,567 06		1,567 06
Lévis Graving Dock.....			4,965 67	4,965 67
Longueuil Wharf.....	762 89	1,517 77		2,280 66
Long Sault Pier.....	2,504 88			2,504 88
Murray Bay do.....		2,451 15		2,451 15
Carried forward.....	1,248,786 43	253,105 27	293,328 66	1,795,220 36

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	1,248,786 43	253,105 27	293,328 66	1,795,220 36
<b>HARBOURS AND RIVERS—Continued.</b>				
<b>Quebec—Concluded.</b>				
New Carlisle.....	1,966 69			1,966 69
Newport River, Mouth of.....	1,672 06			1,672 06
Papineauville or Pentecost Bay Channel.....	3,274 56			3,274 56
Percé Pier.....	7,787 12			7,787 12
Piers below Quebec.....		11,683 65		11,683 65
Pointe au Persil.....		498 40		498 40
Port Daniel.....	2,715 71			2,715 71
Quebec Harbour.....		119 95		119 95
Quebec Immigration Building, Crib Work on Break- water.....	2,467 00			2,467 00
Rivière Cap de Chatte.....	2,500 43			2,500 43
do du Lièvre.....	64,506 74			64,506 74
do du Loup (en bas) Wharf.....		392 46		392 46
do Madawaska.....	400 00			400 00
do Mechinac.....	499 65			499 65
do Nicolet, Harbour of Refuge.....	10,999 93			10,999 93
do Ouelle Pier.....		342 82		342 82
do Ste Anne de la Pérade.....	2,375 00			2,375 00
River St. Francis.....	4,059 44			4,059 44
do St. Lawrence, Breaking Ice between Sorel and Three Rivers.....			2,944 42	2,944 42
do St. Lawrence.....		30 00		30 00
do do Water Levels.....		1,943 56		1,943 56
do Yamachiche.....	825 40			825 40
do Yamaska, Stone Protection to Dam, &c.....	2,493 20	199 87	801 75	3,494 82
St. Alphonse, Bagotville.....	1,024 54			1,024 54
Ste Anne de Beaupré.....		25 00		25 00
Ste Anne du Saguenay.....	2,109 69			2,109 69
St. Irénée Wharf.....	2,890 47			2,890 47
St. Laurent (Isle d'Orléans) Pier.....		369 28		369 28
St. Thomas de Montmagny do.....		14 00		14 00
Sorel Ice Piers.....	2,573 32			2,573 32
Three Rivers Harbour.....		7 40		7 40
do Pier.....	3,999 83			3,999 83
Trois Pistoles Pier.....	2,120 58			2,120 58
<b>Ontario.</b>				
Belleville Harbour.....	2,576 78			2,576 78
Burlington Channel.....		115 22	702 04	817 26
Cobourg.....	9,871 53			9,871 53
Collingwood.....	7,281 55			7,281 55
Goderich.....	3,511 46			3,511 46
Harbours and Rivers generally.....			8,725 73	8,725 73
Hilton, or Marksdale.....	162 00			162 00
Kaministiquia River.....	32,403 65			32,403 65
Kincardine.....	5,049 50			5,049 50
Kingston Harbour.....	6,851 84			6,851 84
do Graving Dock.....	33,763 87			33,763 87
Kingsville, Lake Erie.....	5,188 72			5,188 72
Little Current, Lake Huron.....	222 80			222 80
Little Nation River.....	4,509 06			4,509 06
Meaford Harbour.....	7,775 00			7,775 00
McGregor's Creek.....	7,809 76			7,809 76
do Harbour.....	2,000 00			2,000 00
Narrows between Lakes Simcoe and Couchiching.....	500 00			500 00
Oakville Harbour.....	2,783 81			2,783 81
Carried forward.....	1,504,909 12	268,846 88	306,502 60	2,079,658 60

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
<b>HARBOURS AND RIVERS—Concluded.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	<b>\$ cts.</b>
Brought forward.....	1,504,309 12	268,846 88	306,502 60	2,079,658 60
<b>Ontario—Concluded.</b>				
Ottawa River Revetment Wall.....	18 70			18 70
Owen Sound.....	18,418 20			18,418 20
Pocetanguishene.....	15,014 48			15,014 48
Port Albert.....	939 25			939 25
do Arthur Harbour.....	101,763 94			101,763 94
do Elgin.....	2,450 13			2,450 13
do Hope.....	2,492 31			2,492 31
Portsmouth.....	5,933 74			5,933 74
Rideau River, Dredging North Branch.....	3,886 54			3,886 54
Rivière aux Pêches.....	300 00			300 00
do Pucos.....	2,003 59			2,003 59
River Ottawa, Narrows above Pembroke.....	3,298 40			3,298 40
Rondeau.....	1,997 59			1,997 59
Sault Ste. Marie.....	12,019 26			12,019 26
Shaguanadah, Grand Manitoulin Islands.....	24 90			24 90
Southampton.....	1,852 50			1,852 50
Sumnerstown.....	1,118 27			1,118 27
Thornbury, Dredging.....	2,818 13			2,818 13
Tolsma Bay, Cockburn Island.....	7,756 40			7,756 40
Toronto Harbour.....	30,233 78			30,233 78
<b>Manitoba.</b>				
Harbours and Rivers generally.....			2,456 80	2,456 80
<b>British Columbia.</b>				
Chemannus.....		198 00		198 00
Columbia River.....	4,919 54			4,919 54
Coquitlam do.....	974 37			974 37
Cowichan do.....	999 56			999 56
Esquimalt Graving Dock.....	7,949 16		12,720 10	20,669 26
Fraser River.....	19,998 23			19,998 23
Harrison.....	693 94			693 94
Koksalish.....	497 78			497 78
Nanaimo Harbour, Removal of Nicol rock.....	10,028 05			10,028 05
do Bigg's Portage.....	987 38			987 38
Nicomackel River.....	504 75			504 75
River Somass.....	467 48			467 48
Serpentine River.....	997 50			997 50
Victoria Harbour.....	11,633 86			11,633 86
<b>HARBOURS AND RIVERS GENERALLY.....</b>			10,750 38	10,750 38
<b>DREDGES.....</b>	38,791 75	46,214 33		85,006 08
<b>DREDGING.</b>				
<b>Nova Scotia.</b>				
Arisaig.....	\$1,378 79			
Barrington.....	3,889 60			
Bayfield.....	2,619 69			
Granton.....	1,143 90			
Little Glace Bay.....	4,735 27			
McNair's Cove.....	2,642 67			
Pictou.....	1,198 38			
Yarmouth.....	6,653 87			
Generally.....	767 22			
	\$25,029 39			
Carried forward.....	\$25,029 39	1,818,092 58	315,259 21	332,429 88
				2,465,781 67

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward, . . . \$25,029 39	1,818,092 58	315,259 21	332,429 88	2,465,781 67
DREDGING—Continued.				
Prince Edward Island.				
Connolly's Wharf. . . . . \$1,122 17				
Peake Bros. & Co.'s Wharf. . . 1,124 69				
P. E. I. Railway do . . . . . 242 59				
Red Point do . . . . . 991 12				
Steam Navigation Co. do . . . 1,610 50				
Generally. . . . . 4 23				
	\$5,095 30			
New Brunswick.				
Dalhousie. . . . . \$1,941 66				
Kennebecasis River. . . . . 1,126 74				
Oromocto Shoal. . . . . 2,944 77				
St. John Harbour, Anchor				
Line Wharf. . . . . 456 14				
Traverse. . . . . 3,439 47				
Generally. . . . . 4 24				
	\$9,913 02			
Total Maritime Provinces. . . . \$40,037 71				
Quebec.				
Chicoutimi. . . . . \$ 170 50				
Grande Rivière. . . . . 586 12				
Lacolle. . . . . 1,790 18				
L'assomption—Charlemagne. . . 748 10				
Ottawa Riv.—Pointe aux Ang. . . 1,311 51				
Papineauville. . . . . 257 00				
Rivière du Loup ( <i>en bas</i> ). . . . 999 90				
do Richelieu. . . . . 3,264 64				
do Ste. Anne de la Pêrade . . . 80 00				
River St. Francis. . . . . 146 50				
do St. Louis. . . . . 657 92				
St. Placide. . . . . 1,175 38				
Generally. . . . . 2,421 78				
	\$13,609 53			
Ontario.				
Brighton. . . . . \$ 595 43				
Burlington Channel. . . . . 4,842 40				
Cobourg. . . . . 1,207 41				
Goderich. . . . . 261 05				
Kemptville. . . . . 51 81				
Kincardine. . . . . 928 51				
Kingston Harbour. . . . . 580 00				
Newcastle. . . . . 195 97				
Port Hope. . . . . 3,469 53				
Riv. St. Clair, Point Edward. . . 5,214 10				
Saugeen. . . . . 650 48				
Generally. . . . . 2,836 70				
	20,833 39			
Carried forward. . . . . \$74,480 63	1,818,092 58	315,259 21	332,429 88	2,465,781 67

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward..... \$74,480 63	1,818,092 58	315,259 21	332,429 88	2,465,781 67
<b>DREDGING—Concluded.</b>				
<i>Manitoba.</i>				
Red River..... \$12,067 05				
White Mud River..... 3,495 38				
Generally..... 2,218 96				
	17,781 39			
<i>British Columbia.</i>				
Fraser River..... \$4,253 14				
Esquimalt Graving Dock..... 622 06				
New Westminster..... 902 99				
Victoria Harbour..... 8,369 43				
	14,147 62			
	106,409 64			106,409 64
DREDGING—GENERAL SERVICE.....			5,463 47	5,463 47
<b>SLIDES AND BOOMS.</b>				
Saguenay District Slides.....		2,379 65	1,662 55	4,042 20
St. Maurice do.....	3,436 64	5,517 33	21,290 72	30,244 69
Ottawa do.....			28,644 89	28,644 89
Ottawa River Slides.....	2,292 15	7,292 62		9,584 77
do Rapide des Quinze.....	2,000 00			2,000 00
Gatineau do.....		843 18		843 18
Madawaska do.....	1,503 42	4,355 53		5,858 95
Coulonge do.....	795 77	1,076 01		1,871 78
Black do.....	643 83	2,472 95		3,116 78
Petawawa do.....		3,837 04		3,837 04
Newcastle District Works.....		5,143 89	2,090 00	7,233 89
St. Maurice, Grand'Mère Sorting Booms.....	9,000 00			9,000 00
Dumoine River Works.....		1,122 98		1,122 98
Generally.....			977 92	977 92
<b>ROADS AND BRIDGES.</b>				
Des Joachims Bridge.....	125 00			125 00
Portage du Fort Bridge.....	5,394 12			5,394 12
Ottawa, Cartier Square.....		232 01		232 01
do Chaudière Slide Bridge.....		4,219 59		4,219 59
do Maria Street Bridge.....		176 87		176 87
do McLaren's Bridge, Rideau River.....	2,000 00			2,000 00
do New Iron Truss Bridge.....	13,090 37			13,090 37
do Sapper's Bridge.....		146 54		146 54
do St. Patrick Street.....		22 99		22 99
do Union Suspension Bridge.....		1,161 37		1,161 37
do Wellington Street.....	4,951 58	7,289 55		12,241 13
Battleford Bridge, N.W.T.....	1,485 77			1,485 77
Belly River Bridge, Lethbridge, N.W.T.....	239 37			239 37
Bow do N.W.T.....	18 40			18 40
Calgary Bridge, N.W.T.....	39 10			39 10
Carried forward.....	1,971,517 74	362,549 31	392,559 43	2,726,626 48

## APPENDIX No. 1—Continued.

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	1,971,517 74	367,549 31	392,559 43	2,726,626 48
<b>TELEGRAPH LINES.</b>				
<i>Nova Scotia.</i>				
Cape Sable.....			368 16	368 16
Cheticamp.....	\$ 497 49		778 22	778 22
Digby.....	1,752 00			
Meat Cove.....	4,663 24		1,951 98	1,951 98
	6,912 73			6,912 73
<i>Prince Edward Island.</i>				
Between Island and Mainland (subsidy).....			1,946 66	1,946 66
<i>New Brunswick.</i>				
Bay of Fundy.....	\$1,073 47			
Escuminac.....	242 59			
	\$ 1,316 06			
<i>Newfoundland.</i>				
Anglo-American Co., subsidy Cape Ray line.....	250 00			
<i>Quebec.</i>				
North Shore St. Lawrence, Quebec to Grosse Ile.....	\$7,178 33			
North Shore St. Lawrence, towards Point aux Esqui- maux.....	7,940 53	7,518 57		7,518 57
Magdalen Island.....	4,912 81	349 89		349 89
Anticosti.....	4,166 86			
	24,198 53			
LOWER ST LAWRENCE AND MARITIME PROVINCES GENERALLY.....	9,686 77		35,451 36	35,451 36
<i>Ontario.</i>				
Bath and Amherst Island.....			50 66	50 66
Peléé Island.....	\$ 6,908 17		61 55	61 55
Wolfe do.....	2,051 70	8,959 87		8,959 87
<i>North-West Territories.</i>				
Battleford to Edmonton via Saddle Lake Station.....	\$ 691 64			
Clarke's Crossing to Prince Albert.....	6,005 57			
Humbolt to Qu'Appelle.....	5,759 09			
Banff telephone line.....	668 10	13,124 40		13,124 40
Wood Mountain.....			84 00	84 00
Generally.....			25,053 41	25,053 41
<i>British Columbia.</i>				
Bonilla Point line.....	4,360 16			4,360 16
Cariboo line.....			6,441 23	6,441 23
TELEGRAPH SERVICE GENERALLY.....			8,914 26	8,914 26
Carried forward.....	2,012,743 36	362,549 31	473,660 92	2,848,953 59

APPENDIX No. 1—*Concluded.*

Name of Work.	Con- struction.	Repairs.	Staff and Main- tenance.	Total.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.
Brought forward.....	2,012,743 36	362,549 31	473,660 92	2,848,953 59
<b>MISCELLANEOUS.</b>				
Surveys and Inspections and Plans of Government Properties.....			30,279 31	30,279 31
Arbitrations and Awards.....			4,000 00	4,000 00
Miss Margaret Smellie, Gratuity equal to 1 month's pay of her late father.....			55 00	55 00
Agent and Contingencies, British Columbia.....			5,599 33	5,599 33
Unforeseen Expenses.....			76 15	76 15
Totals.....	2,012,743 36	362,549 31	513,670 71	2,888,963 38
<b>WORKS AUTHORIZED BY SPECIAL ACTS OF PARLIAMENT.</b>				
St. Lawrence River—Deepening between Quebec and Montreal.....	243,334 28			243,334 28
Quebec Harbor Improvements.....	385,000 00			385,000 00
Totals.....	628,334 28			628,334 28
Grand Totals.....	2,641,077 64	362,549 31	513,670 71	3,517,297 66

O. DIONNE,  
*Accountant.*

PUBLIC WORKS DEPARTMENT,  
OTTAWA, 4th December, 1889.





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APPENDIX No. 2.

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REPORT

ON

PUBLIC BUILDINGS

THROUGHOUT THE DOMINION,

FOR THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1889.

BY

THOMAS FULLER. CHIEF ARCHITECT.

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## APPENDIX No. 2.

### REPORT OF THE CHIEF ARCHITECT.

Ref. No. 103,357.

CHIEF ARCHITECT'S OFFICE,  
OTTAWA, 9th November, 1889.

SIR,—I have the honour to transmit herewith the annual report on public buildings and works under my charge, for the fiscal year ended 30th June, 1889.

I have the honour to be, Sir,

Your obedient servant,

THOMAS FULLER,  
*Chief Architect.*

A GOBEIL, Esq.,  
Secretary Department Public Works,  
Ottawa.

### PROVINCE OF PRINCE EDWARD ISLAND.

#### CHARLOTTETOWN.

##### DOMINION BUILDING.

A new time lock was placed on the door of the safe of the Receiver General's Department and sundry minor repairs executed, under the supervision of Mr. W. E. Harris, architect.

#### MONTAGUE.

##### POST OFFICE

Additional grading was done and the building occupied.

Plans, &c., prepared by this Department.

Superintending architects, Messrs. Stirling & Harris.

Contractor, Mr. L. A. Wilmot.

### PROVINCE OF NOVA SCOTIA.

#### AMHERST.

##### PUBLIC BUILDING.

An asphalt sidewalk, with stone curb, was laid the entire length of both street fronts, excepting opposite the gateways, where block pavement was put down. Owing to alteration of street grade necessary additional granite entrance steps were put in, and the original steps taken down and rebuilt; a cement floor was laid in the boiler room, the outside walls pointed, and outside woodwork and galvanized iron painted, and repairs were made to drains, roof, gates, gateways. All the windows were furnished with storm sashes. The building has been fitted with incandescent electric lamps.

Clerk of Works, Mr. John E. Turnbull.

## ANNA POLIS.

## POST OFFICE, &amp;c., BUILDING.

On 20th March, 1889, a site was obtained on the corner of St. George and Railway streets, and on 7th June, 1889, a contract for the construction of the building was entered into. The building will be two and a-half stories, of brick, on a stone foundation, 58 feet by 35 feet, with a one-story brick annex for an Examining Warehouse, 13 feet by 31 feet. The ground floor is to be for the Post Office and the first floor for the Customs and Inland Revenue Departments, each department being furnished with a brick vault; and the attic is to be occupied by the caretaker.

Plans, &c., prepared and work superintended by this Department.

Clerk of Works, Mr. Charles Jacques.

Contractors, Messrs. Rhodes, Curry & Co., of Amherst, N.S.

## ANTIGONISH.

## PUBLIC BUILDING.

The hot water heating apparatus has been put in, a portion of the basement has been finished and fitted up as a bonded warehouse, the floor of the public lobby of the post office renewed, a new stairway to the cellar constructed and sundry minor works executed.

Clerk of Works, John E. Campbell.

## HALIFAX.

## DOMINION BUILDING.

The roof has been repaired, and a new flag-staff, iron ladder and iron railing erected, and parcel chute from the post office to the basement constructed.

## EXAMINING WAREHOUSE.

The parcel office was enlarged and the counters and shelving therein extended; several of the offices were cleaned and painted.

Clerk of Works, Mr. John E. Turnbull.

## NAPPAN.

## EXPERIMENTAL FARM BUILDINGS.

On 15th August, 1888, a contract was entered into for the construction of the following buildings, which are now in progress:—

*Superintendent's Residence.*—A wooden two story building, with a stone basement; the main building 42 feet by 34 feet, and a kitchen wing 24 feet by 24 feet; to have on the ground floor a hall and staircase, a parlor, a library, a dining room, an office, a kitchen, two pantries, a wash-room, back stairs, &c., and on the first floor nine bedrooms, a bath room, a closet, &c.

*Workmen's Cottage.*—A one and one-half story, wooden cottage, 27 feet by 21 feet, on a stone basement, with a summer kitchen in the rear 10 feet by 14 feet. The ground floor will consist of a parlor, kitchen and store room, and the first floor of three bedrooms and a store room.

*Barn and Stabling.*—These are to be of wood, and to consist of a main building 111 feet by 50 feet, 40 feet in height, on a stone basement 12 feet in height, and a wing 65 feet by 32 feet and 32 feet in height.

The basement is arranged to accommodate horned cattle and horses; the ground floor is a driving floor, and for hay and grain storage.

Plans prepared and work carried on under the supervision of this Department.

Clerk of Works, Lt.-Col. Wm. Blair.

Contractors, Messrs. Rhodes, Curry & Co.

## NEW GLASGOW.

## PUBLIC BUILDING.

The water service of the building has been connected with that of the Water-works Company; a new urinal and wash basin have been put in, and the ground and

first floor windows have been furnished with storm sash, and some general repairs have been made.

Clerk of Works, Mr. John E. Turnbull.

### SYDNEY.

#### POST OFFICE, &c., BUILDING.

A contract for the construction of this building, on the corner of Charlotte and Dorchester streets, was entered into 12th December, 1888, and construction is now in progress. It consists of a main three story brick building, on a stone foundation, 57 feet by 44 feet, with a clock tower on the street corner, and a one story annex, 45 feet by 23 feet in the rear. The ground floor of main building is to be occupied by the Post Office, the first floor by the Customs, Inland Revenue and Marine offices, and the attic is for the apartments of the caretaker; the Examining Warehouse and the Weights and Measures offices will be in the annex.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. T. E. Burchell, Sydney.

Contractors, Messrs. Cowan & Donald, Moncton.

### WINDSOR.

#### POST OFFICE BUILDING.

Storm sashes and storm doors were supplied throughout and repairs made to furnace, plumbing and fittings.

Clerk of Works, Mr. John E. Turnbull.

### YARMOUTH.

#### PUBLIC BUILDING.

Additions were made to the heating surface, additional furniture supplied, and alterations made in Money Order Office.

## PROVINCE OF NEW BRUNSWICK.

### BATHURST.

#### PUBLIC BUILDING.

The exterior faces of walls were repointed and the heating apparatus was extended, the Custom House floor taken up and re-laid, and repairs were made to roofing, and some painting, &c.

Clerk of Works, Mr. John E. Turnbull.

### CARLETON.

#### POST OFFICE.

Repairs were made to the slating and flashing of the roof, the clock turret windows, the water pipes and the door springs.

Works carried out under the supervision of Mr. W. J. McCordock.

### CHATHAM.

#### POST OFFICE.

This building is in a dilapidated state, and requires extensive repairs. In the meantime, the outer walls have been supported and cracks filled, and cement covering repaired, and Post Office floor was strengthened and fireplaces made safe.

Clerk of Works, Mr. John E. Turnbull.

### DALHOUSIE.

#### POST OFFICE.

This building, which was described in my report of last year, is still in progress.

Plans, &c., prepared and work carried out under the supervision of this Department.

Clerk of Works, Mr. J. C. Barberie.

### DORCHESTER.

#### MARITIME PENITENTIARY.

Some articles of furniture, &c., were furnished to the Deputy Warden's residence.

### FREDERICTON.

The attic rooms were partitioned and plastered to provide a residence for the caretaker, additions made to plumbing and gas fitting, and a small hoisting apparatus and elevator supplied.

Clerk of Works, Mr. F. S. Hilyard.

### MONCTON.

#### POST OFFICE.

Owing to the action of the water on the iron pipes they were found to be nearly filled; it was deemed advisable to replace them with lead. Some requisite changes of the drains were made and the entrance gates to the yard were repaired and re-hung, and walls were pointed where necessary.

Clerk of Works, Mr. John E. Turnbull.

### NEWCASTLE.

#### PUBLIC BUILDING.

It was necessary to make some slight changes and to extend the heating apparatus, and sundry repairs, &c., were made.

Clerk of Works, Mr. John E. Turnbull.

### ST. JOHN.

#### CUSTOM HOUSE.

The covering of the north-east and north-west roofs was removed and replaced with asphalt, and while doing this all the old zinc bases of the cresting were removed and new galvanized iron substituted. The fire brick lining of the boiler setting was renewed.

The hydraulic hoist has been provided with new and heavier shafting, valves, &c.

In the centre of the building, those portions not previously cleaned were cleaned and coloured, also the ceilings and cornices of the south wing, and the walls repaired, sized and painted three coats, the hardwood shellacked and varnished, and remaining wood work re-painted grained, &c., and varnished.

The walls of six offices in the north wing, occupied by the Inland Revenue, were cleaned and painted. Repairs were made to bells, locks, flagstuffs, &c.

Works executed under the supervision of Mr. W. J. McCordock.

#### MARINE HOSPITAL.

Sundry repairs were made to the basement, ground and first floor rooms, wards and corridors, and wood work shellacked and varnished, and the walls painted three coats and the roof of the western porch covered and reflashed.

#### POST OFFICE.

The ceilings on the ground floor were cleaned and whitened and walls washed and the iron columns painted.

Repairs were done to ventilating shaft, closets, urinals, bells, locks, clocks, iron roof, cresting and flashing; the cresting and cornices were re-painted.

Work executed under the supervision of Mr. W. J. McCordock.

## SAVINGS BANK.

The asphalt side walks were repaired, and the boiler casing was repaired and re-lined ; coal vaults and iron girders under alley way cleaned, new floors laid, the iron work painted two coats, red lead, and the walls limewashed. The old roof covering was removed and replaced by asphalt.

Work executed under the supervision of Mr. W. J. McCordock.

## ST. STEPHEN.

## PUBLIC BUILDING.

Some door springs and other minor fittings were supplied.

## WOODSTOCK.

## POST OFFICE, CUSTOM HOUSE, &amp;c.

Arrangements are being made to provide a clock to be placed in the turret originally designed for that purpose.

## PROVINCE OF QUEBEC.

## AYLMER.

## POST OFFICE.

This building, which was described in my report of last year, was completed, and furnished with a hot water heating apparatus, and is now being fitted up for occupation.

Plans, specifications, &c., prepared and works carried out under the supervision of this Department.

Clerk of Works, Mr. Thomas Symmes, Aylmer.

Contractor for the building and fittings, Mr. D. B. McDonald, Aylmer.

Contractors for heating apparatus, Messrs. Butterworth, Ottawa.

## CHICOUTIMI.

## MARINE HOSPITAL.

Painting and general repairs were made in the hospital portion of the building.

## COATICOOK.

## PUBLIC BUILDING.

This building, which was described in my report of last year, is being carried on so as to warrant the execution and completion during the autumn of 1889 ; a heating apparatus has been put in, and fittings for Post Office.

Plans and specifications prepared and works superintended by this Department.

Clerk of Works, Mr. Wright Sleeper.

Contractor for buildings and fittings, Mr. F. F. Shurtleff.

Contractor for heating, Mr. W. Clendenning.

## FRASERVILLE (RIVIÈRE DU LOUP).

## POST OFFICE, &amp;c., BUILDINGS.

On 26th March, 1889, Cadastral Lot 266, having a frontage of 100 feet on Iberville street and 75 feet on Champlain street, was purchased.

## HULL.

## POST OFFICE.

A stone boundary wall, with an iron railing, was constructed, and the grounds graded.

Contractor, Mr. Wm. Stuart, Ottawa.

**JOLIETTE,****POST OFFICE, &c.**

This building, which was described in my report of last year, has been carried on so as to warrant its execution and completion during the autumn of 1889.

Plans, &c., prepared and work carried out under the supervision of this Department.

Clerk of Works, Mr. A. Durand, Joliette.

Contractor, Mr. George Beaucage, Quebec.

**LACHINE.****POST OFFICE, &c., BUILDINGS.**

Cadastral lot No. 253 on St. Joseph street, the main street of the town, was acquired for a site, and plans, &c., for a Post Office building thereon, are being prepared by this Department.

**MONTREAL.****ARMORIES.**

The fittings for the various armories and furnishings for offices were supplied, and the places are now occupied.

Plans prepared and works supervised by Mr. A. Raza.

Clerk of Works, Mr. John Bowie.

Contractors, J. B. St. Louis & Brothers, Montreal.

**CUSTOM HOUSE.**

Extensive alterations to boilers and steam heating apparatus were made, the Record Office was enlarged, the entrance and staircase halls were re-laid with tiles, the special agent's office was renovated, and sundry minor repairs were made.

Superintending Architect, Mr. James Nelson.

**EXAMINING WAREHOUSE.**

Alterations in the Assistant Hardware Appraiser's office were made, and the necessary cleaning and painting done.

Superintending Architect, Mr. James Nelson, Montreal.

**POST OFFICE.**

A portion of the external surface of stone work was cleaned and pointed, a new letter slide in front of building constructed, new dials were supplied to the clock, new wire doors to the hoist, new sky-light with wire guards in roof, a new flag-staff, brass railing in Accountant's office, new sorting frame for letter-carriers, desks for Civil Service examinations, safe for Customs Post Office, and furniture for various offices, the public lobby and Money Order Offices were renovated, new water-closets and other plumbing put in, and repairs made to furniture, stamp vendor's office, roof, &c.

Superintending Architect, Mr. James Nelson.

Clerk of Works, Mr. Geo. Bowie.

**QUEBEC.****CITADEL.**

The usual repairs and cleaning were made of the quarters of His Excellency the Governor General, under the supervision of this Department.

**CUSTOM HOUSE.**

The brick setting of the hot-water furnace, being dilapidated, was taken down and re-built, the walls, ceilings, cornices and woodwork on first attic floor, with the exception of the attic passage, were cleaned and re-painted, under the supervision of this Department.

## IMMIGRATION BUILDING.

A range was supplied, as also baths, outside settees on verandas and an enclosed hangard.

Superintending Architect, Mr. J. F. Peachy, Quebec.

## MARINE HOSPITAL.

The plaster of the walls and ceilings, with exception of a few rooms on the ground floor, has been repaired, and in some cases renewed.

Superintending Architect, Mr. J. F. Peachy.

## OBSERVATORY.

The residence of the Commandant has been generally repaired and renovated, varnishing of woodwork, papered and painted.

## POST OFFICE.

The offices of the Post Office on the first floor were cleaned, painted, carpeted, fitted up, furnished and provided with electric bells; new electric clocks were supplied and fitted up in Post Office; a room on first floor was fitted up and furnished for Custom House; panels and fittings and furnishings of Post Office were repaired.

Superintending Architect, Mr. J. F. Peachy.

## QUEEN'S WHARF BUILDING.

General repairs to woodwork, roofs, painting, &c., were made in connection with the Marine and Immigration Offices.

Superintending Architect, Mr. J. F. Peachy.

## ST. HYACINTHE.

## POST OFFICE, &amp;c., BUILDING.

On 19th March, 1889, a site, consisting of Lot 525, and a portion of 524, on the corner of Girouard and St. Joseph streets, with frontages of 81 ft. 6 in., and 133 ft. 3 in., respectively, was acquired, and plans, &c., for the construction of a public building are in course of preparation.

## ST. JÉRÔME.

## PUBLIC BUILDING.

This building, which was described in my report of last year, has since been in constant progress; plans for the hot water apparatus are prepared and the building is expected to be complete for occupation during December, 1889.

Plans and specifications prepared and work supervised by this Department.

Clerk of Works, Mr. J. Matte.

Contractor, Mr. Joseph Fitzpatrick, Joliette.

Contractor for heating apparatus, Mr. E. Chanteloup, Montreal.

## ST. VINCENT DE PAUL.

## PENITENTIARY.

The following works were carried out under the supervision of this Department, by convict labor :—

*Western Dormitory Wing.*—The walls of this portion, which is 116 ft. by 42 ft. on plan, and is to contain 120 cells, were carried up continuously, and is expected to be roofed in and enclosed by October, 1889.

*Keeper's Hall.*—The register for the convicts, indicating the name and number of cell he occupies, was erected and enclosed with brass railing, to prevent being tampered with.

*Warden's Quarters.*—A lead tank and a fountain have been placed in the Warden's grounds.



*Deputy Warden's Quarters.*—A system of electric bells connected with those of the prison was put in.

*Episcopal Chaplain's Residence.*—A water supply connection was made with main tank, a 6-inch main pipe was laid, a sink and hopper closet fitted up.

*Baker's Shop.*—Steam radiators were put in and connected with the boiler and main boiler house.

*Main Building.*—The entrance lobby floor was laid with encaustic tiles and the office connected with the Warden and Deputy Warden's quarters by electric bells, and three wash basins fitted up.

*Piggery.*—The old piggery being dilapidated, a new wooden building, covered with Canada plate, the main portion being 190 ft. by 30 ft.; and an annex for feed boilers, &c., was erected about a half mile from the Penitentiary, and enclosed with a strong wooden fence.

*Work Shops.*—The engine in the carpenter and joiner shop being old and unsuitable, was replaced by a new 45 horse-power engine, with the necessary belting, shafting, &c.

*Water Works.*—The rose of the iron suction pipe in the river was disturbed by ice, and had to be repaired and replaced. To prevent a re-occurrence of this, a pier 30 by 20 feet is being built over the pipe. In addition to the works mentioned, various minor repairs, alterations, &c., were made to the buildings, &c., in connection with this institution.

Plans prepared and work supervised by Mr. John Bowes, Architect.

## SHERBROOKE.

### PUBLIC BUILDING.

Repairs were made to the plastering, plumbing and water closet; a hardwood floor was laid in the Customs Office, whitewashing and tinting were done to the walls and ceilings, the outside woodwork was painted and an asphalt pavement laid along the street line.

## SOREL.

### PUBLIC BUILDING.

Repairs to roof, tower, doors, &c., were made.

## THREE RIVERS.

### CUSTOM HOUSE.

Additional heating surface was put in two of the ground floor offices; an outbuilding for blinds, storm sash, &c., was constructed, and some painting and papering were done to several of the offices.

Superintending Architect, Mr. O. Z. Hamel, Three Rivers.

### POST OFFICE.

An extension of the outbuilding was made, a new drain put in, some articles of furniture supplied the Post Office Inspector's office, and some minor repairs executed.

Superintending Architect, Mr. O. Z. Hamel.

## PROVINCE OF ONTARIO.

### ALMONTE.

### POST OFFICE, &c., BUILDINGS.

A site having been obtained at the junction of Mill and Little Bridge streets, a contract for the construction of the building was entered into, 11th June, 1889.

The building is to have a main portion  $2\frac{1}{2}$  stories and basement 51 feet by 31 feet, and a one story annex, 27 feet by 18 feet. The walls are to be brick with stone dressings and on stone foundations; the floors, partitions and roof of wood; the roof covering of galvanized iron.

Plans, &c., prepared and work supervised by this Department.  
 Clerk of Works, Mr. Andrew Bell, Almonte.  
 Contractor, Mr. Robert Cameron, Almonte.

#### AMHERSTBURG.

The storm sashes were painted.

#### BARRIE.

##### POST OFFICE, &c.

A newspaper sorting frame and several minor fittings were provided for the Post Office, and the building was furnished with incandescent electric light.  
 Superintending Architects, Messrs. Kennedy, Gaviller & Holland, Barrie.

#### BELLEVILLE.

##### POST OFFICE.

The walls and ceilings of the offices were distempered, the woodwork painted, an electric arc light for the front of the building was placed in position, and a postal bag rack and some articles of furniture supplied.

#### BRAMPTON.

##### POST OFFICE, &c., BUILDING.

A contract for the construction of this building was entered into on 23rd October, 1888, and the works are now in progress.

It will consist of a brick three story main portion, 47 ft. by 42 ft., on a stone foundation, with a one story brick building, 40 ft. by 18 ft. in the rear, and connected with the main building. The basement of the main building is to contain fuel and furnace rooms, the ground floor the Post Office, the first floor the Customs and Inland Revenue Offices, and the attic the caretaker's quarters. The annex is to be for Weights and Measures and Examining Warehouse.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. J. A. Trimble.

Contractors, Messrs. Perry, Masson & MacCullough, Brampton.

#### CAYUGA.

##### POST OFFICE.

This building, which was described in my report of last year was completed, and supplied with a hot water heating apparatus, and is now being fitted up and furnished for occupation.

Plans, &c., prepared and work supervised by this Department.

Contractors for building and fittings, Messrs. Draper Bros., Caledonia.

Contractor for heating apparatus, Mr. Adam Black, Hamilton.

#### CHATHAM.

##### POST OFFICE, &c., BUILDING.

Post Office lobby flooring was re-laid and sundry doors refitted.

#### COBOURG.

##### POST OFFICE, CUSTOM HOUSE, &c.

A contract for the erection of an addition on the western side, 18 feet in width by the depth and height of the building, was entered into on the 15th December, 1888, and the work is now in progress. The side and rear walls are of brick, and the front of Ohio sandstone, the work being similar to the original. The ground floor of the addition will consist of a stairway and an Examining Warehouse with offices over.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. Wm. Battell.

Contractors, Messrs. R. & J. Henderson, Cobourg.

## CORNWALL.

## POST OFFICE, &amp;C., BUILDING.

Petty general repairs were executed.

## GANANOQUE.

## POST OFFICE.

This building, which was described in my report of last year, has since been completed, supplied with a hot water apparatus and fitted up for occupation.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. R. Brough, Gananoque.

Contractor, Mr. Geo. Wilson, Gananoque.

## GODERICH.

## POST OFFICE, &amp;C., BUILDINGS.

Lot 5, on the south side of West street, containing half an acre, was acquired from T. N. Dancey for a site, and on 12th November, 1888, a contract was entered into for the construction of a two and a half-story and basement building 46 feet 6 inches by 34 feet on plan, with a one story and basement stone annex, 34 feet by 14 feet 3 inches. The building is to consist on the ground floor of the Post Office and Examining Warehouse, on the first floor the Customs and Inland Revenue Offices, and in the attic the caretakers apartments.

Plans, &c., prepared, and work supervised by this Department.

Supervising Architect, Mr. G. F. Durand, London, Ont.

Clerk of Works, Mr. Edward Sharman.

Contractors, Messrs. Tambling & Jones, London.

## GUELPH.

## POST OFFICE.

A hot water heating apparatus has been put in from plans prepared by and under the supervision of this Department.

Contractor, Mr. John Sims, Toronto.

## HAMILTON.

## DRILL SHED.

Building completed, the armories supplied with a hot water heating apparatus, and occupied.

Plans and specifications for construction of building prepared by Mr. H. James, Architect, Department of Militia and Defence.

Plans and specifications for heating apparatus prepared by this Department.

Superintending Architect, Mr. C. W. Mulligan, Hamilton.

Clerk of Works, Mr. Wm. Casey.

Contractor for building, Mr. M. A. Pigott, Hamilton.

Contractor for heating apparatus, Mr. Adam Clark, Hamilton.

## POST OFFICE, &amp;C., BUILDING.

Some additions to the gas piping and heating were made, inside blinds were supplied to the windows of several offices, and various ordinary repairs executed.

## KINGSTON.

## PENITENTIARY.

The following works were executed by this Department:—

*South Workshops.*—The stone floor flagging was renewed and walls re-pointed; an underground pipe duct, 76 feet long, carried under dome, to the eastern and western wings; doors leading to the dome and offices were put in; walls and ceilings plastered; door and window frames repaired, and all wood work painted three coats.

*Block "B" Dormitory.*—New 2-inch pine floors were laid in the cells, and walls of the cells painted 2 coats in oil; the iron work japanned; the walls of the rooms and vaults of dining hall and inside offices of the western and southern boundary walls were re-pointed in cement.

*Engine House.*—In order to obtain room for an airing yard the old fire engine house of the eastern building was demolished and a two story building west of the same building converted into an engine and hose-reel house by raising the upper floor 1 foot 6 inches, enlarging the doorway and repairing wood work.

*Protestant Chapel.*—The walls were re-plastered and walls and ceilings re-painted.

*Ventilating Flues.*—Brick ventilating flues were built in southern walls of dining hall, one for ventilation and the other to carry off steam from the kitchen.

*Water Supply.*—The system was changed, so that all water is now pumped into and gravitates from main tank.

*Workshops, Water Closets, Etc.*—These having become out of repair were taken out and replaced by eighteen automatic flushing hoppers, having automatic flushing attachments, six urinals and three sinks.

*Heating.*—The heating coils of the Warden's office and female prison, which were previously connected with principal steam main and return pipes, were disconnected therefrom and furnished with a separate main from boilers, and several minor works and repairs and alterations, &c., were done to the various buildings.

Building under supervision of Mr. John Bowes, Architect.

## LINDSAY.

### POST OFFICE, CUSTOMS AND INLAND REVENUE OFFICES.

This building, which was described in my report of last year, has since been carried on steadily, and is expected to be completed for occupation during this autumn. Plans were prepared and a contract entered into for the construction of a hot water heating apparatus.

Plans and specifications and works supervised by this Department.

Clerk of Works, Mr. H. Walters, Lindsay.

Contractor for construction of the building, Mr. P. Navin, Lindsay.

Contractor for heating apparatus, Mr. E. Woods, Lindsay.

## NAPANEE.

### POST OFFICE AND CUSTOM HOUSE AND INLAND REVENUE.

The works in connection with this building, which was described in my report of last year, have been in steady progress since, and the building is expected to be completed this autumn. Plans, &c., have been prepared for a hot water heating apparatus.

Plans, &c., prepared and works supervised by this Department.

Supervising Architect, Mr. F. Bartlett, Napanee.

Clerk of Works, Mr. J. E. Herring.

Contractor, Mr. George Newlands, Kingston.

## OTTAWA.

### CENTRAL EXPERIMENTAL FARM (NEAR OTTAWA).

The following works, referred to in my report of last year, have been completed, viz.:—

Residence of the Superintendent-General.

Four residences for the staff officials.

Barn and stabling.

Museum and offices.

Heating apparatus for the residences, museum and offices.

On 30th July, 1888, a contract was entered into for the construction of a building for greenhouses and seed stores. The latter will be a one and a-half story brick building on a stone foundation, having a ground floor, containing a seed room,

24 feet by 17 feet; a potting room, 37 feet by 16 feet, and two rooms above. Adjoining the potting room are two greenhouses of wood, on a stone foundation, 80 feet 6 inches by 13 feet, and 80 feet 6 inches by 14 feet, respectively.

A hot water heating apparatus has been put in, and the building is now occupied.

In August last a contract was entered into for the construction of a one-and-a-half story building, 100 feet by 30 feet, for a hennery, which building was completed during the year.

On 23rd October a contract was entered into for the construction of a cottage, known as No. 1 Cottage, near the barn, and also for a stable for the Superintendent, both of wood on stone foundations. The cottage will contain an unfinished basement; a ground floor to contain a parlor, a kitchen, a pantry, a store room and a shed; and an attic with three rooms. The stable will contain a carriage room, stalls, and a loose box, and a loft over.

Plans and specifications prepared and work carried out under the superintendence of this Department.

Clerk of Works for Superintendent's residence, barn and stabling, museum and offices, No. 1 Cottage, seed stores and conservatories, hennery, Superintendent's stables, alterations of farm cottages, the various heating and gas apparatus and minor works and fittings, Mr. W. J. Beckett.

Clerk of Works for four staff residences, Mr. James Gibson.

Contractor for Superintendent-General's residence, Mr. F. Toms.

Contractors for four staff residences, Cottage No. 1 and Superintendent-General's stables, Messrs. Tobin & O'Keefe, Ottawa.

Contractor for barn and stabling, museum and offices, and the hennery, Mr. William Stuart.

Contractor for seed stores and conservatories, Messrs. Beaudet & Desjardins.

Contractor for heating apparatus, Superintendent-General's residence, and four staff residences, Messrs. F. G. Johnson & Co., Ottawa.

Contractor for heating apparatus for museum and offices, conservatories and seed stores, Messrs. Garth & Co., Montreal.

#### GOVERNMENT HOUSE.

The decayed shingles of the hall roof were removed and replaced with galvanized iron.

All the connections with the drains were opened and tested by a sanitary engineer employed by the Governor General, all decayed flooring in basement was renewed and a portion of one of the basement rooms partitioned off and shelved for use as a wine cellar. Furnaces, stoves and pipes were repaired and cleaned, blankets, window curtains, blinds, carpets, chair-covers, crockery, china and glassware were supplied; a considerable number of the rooms were distempered, tinted, painted, papered and the necessary repairs to window glazing made.

The drain in court-yard was opened and cleaned; 650 feet of trench was opened and a 6-in tile drain laid therein to connect cottage with drainage system; 465 feet of trench was opened and a 2-inch gas pipe laid to laundry; 2,200 lin. feet of boundary fence and 3,300 lin. feet of 3-rail fence were rebuilt; 660 lin. feet of boundary fence and 1,000 feet of picket fence were repaired and 400 feet of sidewalk, 3 feet 4 inches wide, were laid.

Carpets were taken up, beaten and relaid; the usual general cleaning was done and the conservatories, gardens, lawns and grounds were attended to and kept in good order.

Under superintendence of this Department.

Clerk of Works, Mr. Wm. Hutcheson.

#### EASTERN AND WESTERN BLOCK, DEPARTMENTAL BUILDINGS.

Essential repairs, cleaning, distempering, painting, pointing outside walls, furnishing and fitting were done, under the supervision of the Department.

#### NEW DEPARTMENTAL BUILDINGS, WELLINGTON STREET.

Specifications and drawings were prepared and tenders received for three passenger elevators and one freight elevator, which are now being erected; the iron staircase and heating apparatus were completed, and the building is being fitted up for occupation, and was so far advanced that the second floor was occupied by the Indian Department on the 1st May.

Plans, &c., prepared and work superintended by this Department.

Clerk of Works, Mr. Samuel Adams.

Contractor for construction of building, Mr. A. Charlebois, Quebec.

Contractor for heating apparatus, Messrs. Garth & Co., Montreal.

Contractor for elevators, Mr. Jno. Fenson, Toronto.

#### PARLIAMENT BUILDING.

The roof covering of Library was renewed in copper; the apartments of the Speaker of the Senate were altered, two additional rooms fitted up, painted, papered and furnished, and a quantity of furniture supplied and renewals effected to the rooms throughout.

Usual and ordinary alterations, repairs and renewals were made, cleaning and painting done, and furniture and fittings supplied to the offices, &c., throughout the building.

Works executed under the supervision of this branch of the Department.

#### PRINTING BUREAU.

This building, which was described in a previous report, is nearly completed, and is being fitted up for occupation.

Plans and specifications prepared and work superintended by this Department.

Superintending Architect, Mr. J. P. M. Lecourt.

Clerk of Works, Mr. H. L. Pinard.

Contractor, Mr. John E. Askwith, Ottawa.

#### PARLIAMENT GROUNDS.

These were satisfactorily maintained.

#### MAJOR'S HILL PARK.

The grounds have been kept in good order, and sundry improvements made in walks, grass plots, &c.

#### PUBLIC BUILDINGS, REPAIRING STREETS, &c.

Little Sussex street, from Sussex street to the canal basin, as well as Canal street east, and Canal street west, throughout their entire length, were graded and macadamised.

Repairs were made to St. Patrick's street Hill roadway, steps and sidewalk; to Wellington street roadway and sidewalk, and to the fence and sidewalk at Cartier Square.

The various roadways, sidewalks and footpaths were kept clear of snow during the winter.

#### VICTORIA HALL.

The basement floor was laid in cement and ceiled in wood. On street fronts arched brick areas, with plate glass lights, flush with sidewalk, were built at basement windows; a stone boundary wall was built on O'Connor and Queen streets and on the western boundary of the lot, and the yard graded.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. Samuel Adams.

**PEMBROKE.****POST OFFICE.**

This building, which was described in my report of last year, is now in progress, and is expected to be complete and ready for occupation by the close of the fiscal year 1889-90.

Plans, &c., prepared and works superintended by this Department.

Clerk of Works, Mr. T. L. Morris, P.L.S., Pembroke.

Contractors, Messrs. Munro, Beatty & Grieve, Pembroke.

**PETERBOROUGH.****POST OFFICE.**

Arrangements are being made to provide and fit up in the tower a clock, with illuminated dials.

**PORT ARTHUR.****POST OFFICE.**

Negotiations with a view to obtain a site are in progress.

**PRESCOTT.****POST OFFICE, CUSTOM HOUSE AND INLAND REVENUE OFFICES.**

These buildings which were described in my report of last year are being proceeded with.

Plans, &c., prepared and works superintended by this Department.

Clerk of Works Mr. D. Barr, Prescott.

Contractors, Messrs. Crain & Mix, Prescott.

**ST. THOMAS.****POST OFFICE, &c., BUILDING.**

The Post Office lobby floor was re-laid, and partial repairs, &c., have been made to plumbing, &c.

Superintending Architect, Mr. Charles Horton, St. Thomas.

**TORONTO.****CUSTOM HOUSE.**

Sundry alterations and repairs were made in the offices; the basement walls and ceilings were whitewashed, and the boilers re-covered with patent boiler covering.

Supervising Architect, Mr. D. B. Dick, Toronto.

**EXAMINING WAREHOUSE.**

The flooring of the ground floor and part of the first floor was renewed, some minor alterations made in the machinery, and also some painting, whitewashing and general repairs.

Specifications, &c., prepared and work supervised by Mr. D. B. Dick, Architect.

**INLAND REVENUE OFFICES.**

Sundry minor repairs were done to heating apparatus and plumbing, and smokestacks, with revolving cowls, were put up.

Under supervision of this Department.

**POST OFFICE.**

General repairs and sundry minor alterations were made to heating, plumbing, woodwork, &c., some furniture was supplied, and an office was fitted up and furnished for Customs parcels in bond.

Supervising Architect, Mr. D. B. Dick, Toronto.

## TRENTON.

## POST OFFICE, &amp;c.

This building, which was described in my report of last year, has been carried on nearly to completion, and is being fitted up with a hot water apparatus, and the fittings and furniture for the use of the officials of the various departments.

Plans, &c., prepared and work superintended by this Department.

Clerk of Works, Mr. Geo. Crowe.

Contractor, Mr. Walter Alford. Belleville.

## PROVINCE OF MANITOBA

## BRANDON.

## POST OFFICE.

A site, with a frontage of 96 feet on Rosser avenue, by a depth of 100 feet, was obtained, and on 18th day of June last a contract was entered into for the construction of a building thereon. The building will comprise a main portion, 82 feet by 41 feet, to consist of a stone basement surmounted by three stories and an attic, in brick; and a one-story brick annex, 35 feet by 30 feet. On the ground floor will be the Post Office, the Examining Warehouse, the Gas Inspector's Office, and the Weights and Measures Office; on the first floor the Customs Office, Land Offices and vault; and on the second floor the Inland Revenue Offices and caretaker's apartments—the attic to be unfinished.

Plans and specifications prepared by this Department.

Superintending Architect, Mr. W. B. Marshall, Brandon.

Clerk of Works, Mr. F. J. Chubb.

Contractor, Mr. James Hanbury, Brandon.

## ST. PAUL'S.

## INDUSTRIAL SCHOOL.

On 13th May, 1889, a contract was entered into for the construction of a school building, a laundry, a cow house, a stable, closets, &c.

*School Building.*—A "T" shaped 2½ story brick building, on a stone foundation, with wooden roof, floors and partitions, the front portion to be 80 feet by 33 feet 6 inches and the rear portion 33 feet 6 inches by 33 feet 6 inches. On the ground floor are to be two class rooms, two offices, a dining room, a kitchen, a scullery and a pantry; on the first floor two dormitories, nine bedrooms, and two wash and bath rooms, and in the attic eleven rooms.

*Laundry.*—A two-story wooden building, on a stone foundation, 24 feet by 20 feet.

*Cow House.*—A one-story wooden building, 28 feet by 24 feet.

*Stable and Carriage House.*—A one-story and loft wooden building, on a pile foundation, 33 feet by 21 feet.

Plans prepared by this Department. Supervised by Mr. D. Smith, Clerk of Works, Winnipeg.

Contractors, Madden & Bruce, Winnipeg.

## STONY MOUNTAIN.

## MANITOBA PENITENTIARY.

*Prison Building.*—General repairs were made, electric bells and water tanks were put in, and a partition inclosing engine room.

*Warden's Residence.*—General repairs, painting, kalsomining and papering walls and alterations of heating pipes were made.

*Surgeon's and Chaplain's Residences.*—On the 24th January, 1889, a contract was entered into for the construction of three similar buildings to accommodate the



surgeon and the Roman Catholic and Episcopal chaplains. In each case the building is to be a one and one-half story of brick, resting on stone foundation, with wooden partitions and roof. The basement will contain a dining room, a kitchen, a servant's room, a store and furnace room; the ground floor a parlor, a reception room, a library, a breakfast room, a bedroom, a bath room and a hat room, and the attic four bedrooms. Special drains, with cess pool, are being put in, as the distance to connect with the general system of drainage is too great. Wells are being sunk, one for each residence, by convict labor.

*Warden's Stables.*—This building, described in my report of last year, has since been completed.

*Hospital Building.*—A passage from prison was constructed and the building supplied with additional urinals, attic window gratings, stone porch, lamps, furniture, &c., and the works referred to in my report of last year were completed.

*Deputy Warden's Stables.*—This stable, coach and outbuildings over, 46 feet by 27 feet, was constructed by convict labor.

*Laundry Building.*—Fittings referred to in last year's report completed and a well sunk.

*Guards' Cottages.*—A quantity of necessary painting, plastering and kalsomining was made.

Plans, &c., prepared by this Department.

Clerk of Works, Mr. D. Smith.

Contractor for surgeon's and chaplain's residences, Messrs. Tobin & O'Keefe, Ottawa.

## WINNIPEG.

### CUSTOM HOUSE.

Some minor repairs were made, some additional furniture supplied and electric bells put in.

Resident Clerk of Works, Mr. D. Smith.

### LANDS OFFICE.

General repairs, plastering, painting, the supply of new furniture, linoleum, &c., were made, under the supervision of the resident Clerk of Works, Mr. D. Smith.

### TEMPORARY POST OFFICE.

Sundry repairs and alterations necessary to render the building suitable for use as an Examining Warehouse have been carried out, under the supervision of the resident Clerk of Works, Mr. D. Smith.

## NORTH-WEST TERRITORIES.

### CALGARY.

#### BARRACKS.

Minor repairs at the Commandant's quarters and Assistant Commissioner's quarters were made.

The barracks building referred to in my report of last year is nearly complete, and the mess-room being now occupied as a dormitory, and the hospital is complete ready for occupation.

Plans, &c., prepared and work carried out under the supervision of this Department.

Clerk of Works, Mr. H. D. Johnson.

Contractors, Messrs. Kennedy & Heney, Ottawa.

#### COURT HOUSE.

On 8th November, 1888, a contract was entered into for the construction of a two story stone Court House, having brick partitions and wooden floors and roof, and

measuring 91 feet by 51 feet on plan. On the ground floor are to be rooms for sheriff, grand jury, barristers, witnesses, jailers and prisoners; a vault, water closets, a furnace room, and a fuel room—the two last mentioned going from the ground floor ceiling to below the level of the ground. On the first floor are the court room, rooms for judges, barristers and jury, and water closets.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. H. D. Johnson

Contractor, Mr. John Gillies McCallum, Calgary.

## INDIAN HEAD.

### EXPERIMENTAL FARM BUILDINGS.

On 5th November, 1888, a contract was entered into for the construction of the following buildings, which are now in progress :—

*Superintendent's Residence.*—A wooden two-story building, with a stone basement, the main building 42 feet by 34 feet, and a kitchen wing 24 feet by 21 feet; to have on the ground floor a hall and staircase, a parlor, a library, a dining room, an office, a kitchen, two pantries, a wash-room, back stairs, &c., and on the first floor, nine bedrooms, a bath-room, a closet, &c.

*Horticulturist's Residence.*—A wooden two-story building, 32 feet by 35 feet, on a stone basement, with a lean-to summer kitchen, 25 feet by 10 feet, in the rear, and to contain a parlor, an office, a dining room and a pantry on the ground floor, with five bedrooms and a bath-room over.

*Workmen's Cottage.*—A wooden one and a half story cottage, 27 feet by 21 feet, on a stone basement, with a lean-to summer kitchen, 14 feet by 10 feet in the rear, and to contain a parlor, kitchen and store room on the ground floor, with three bedrooms and pantry over.

*Barn and Stabling.*—These are to be of wood, and consist of a main building 111 feet by 50 feet, 40 feet in height, on a 12 feet stone basement, and a wing 65 feet by 32 feet, and 32 feet in height. The basement is arranged to accommodate horned cattle and horses, the ground floor as a driving floor, and for hay storage.

Plans, &c., prepared and work carried on under the supervision of this Department.

Clerk of Works, Mr. Angus Mackay.

Contractor, Mr. Isaac R. Reilly, Regina.

## MACLEOD.

### BARRACKS.

On 2nd November, 1888, a contract was entered into for the construction of a stable for the North-West Mounted Police, which is now completed.

The building consists of a main portion, 131 feet 6 inches by 29 feet 6 inches, containing fifty-one stables, and a harness or saddle room, 40 feet by 14 feet, adjoining. Over the main portion is a low loft.

Plans, &c., prepared and work superintended by this Department.

Clerk of Works, Mr. H. J. Peters, Regina.

Contractors, Messrs. Williams & Willoughby, Regina.

## PRINCE ALBERT.

### COURT HOUSE AND GAOL.

A kitchen for the use of the gaol was formed in basement under Court House.

Clerk of Works, Mr. H. J. Peters.

## QU'APPELLE.

### INDUSTRIAL SCHOOL.

The girls' school, bake-house and carpenter's shop were completed.

Plans, &c., prepared by this Department.

Clerk of Works, Mr. H. J. Peters.

## REGINA.

## BARRACKS.

New lead-lined wash troughs, with necessary connections, were provided and placed in the north and south men's barracks.

Clerk of Works, Mr. H. T. Peters, Regina.

## COURT HOUSE.

A hot air furnace with connections was placed in the basement.

Resident Clerk of Works, Mr. H. T. Peters.

## INDUSTRIAL SCHOOL.

On 14th May, 1889, a contract was entered into for the construction of an Industrial School at White Farm, near Regina, which is now in course of erection. The building is to be "T" shaped, and consist of a front portion, 180 feet by 37 feet, with a rear wing 75 feet by 37 feet. There is to be a stone basement and two full stories of brick. On the ground floor are to be a general assembly room, a dining room, a class room, a sewing room, a teacher's dining room, a reception room, two rooms for Principal, a kitchen, a laundry, a scullery, a larder and a coal shed; and on the first floor a girls' dormitory, a boys' dormitory, a drying room, eleven bedrooms and a bath-room.

Resident Clerk of Works, Mr. H. T. Peters.

Contractors, Messrs. Williams & Willoughby, Regina.

## JAIL AND LUNATIC ASYLUM.

Minor alterations of the ground floor portion of Jailor's apartments and offices were made, an iron staircase built between ground and first floor of jail, and iron doors, one in wall between prison and Jailor's apartments, and the other in wall between basement and yard.

Resident Clerk of Works, Mr. H. T. Peters.

## NEW RESIDENCE FOR THE LIEUTENANT GOVERNOR.

On the 19th March, 1889, a contract was entered into for the construction of this building on the Government reserve, and the works are now in progress.

The building will be of brick on a stone foundation, with partitions, floors and roofs of wood, to consist of a main portion 64 feet 6 inches by 55 feet, and that for servants, offices and bedrooms 56 feet by 42 feet.

The basement will accommodate the furnace, fuel and stores and contain brick tanks for rain and well water. On the ground floor there will be a lobby, vestibule and main hall and staircase, two drawing rooms, dining room, library, billiard room, kitchen, housekeeper's room, servants' hall, scullery, dairy, cooling room, sewing room, storeroom, china pantry, wine vault, brick safe and lavatory; and on the first floor are to be fifteen bedrooms, two dressing rooms, with bath, also a bath-room and a watercloset.

Plans, &c., prepared and work executed under the supervision of this Department.

Clerk of Works, Mr. H. T. Peters.

Contractor, Mr. Wm. Henderson, Regina.

## OLD GOVERNMENT HOUSE.

A coal shed and an ice house were built, and minor general repairs to buildings and outhouses made.

## RIDING HALL.

On 3rd November, 1888, a contract for the erection of a riding hall, to replace that destroyed by fire, was entered into and the works are now in progress. With the exception of a porch, 20 feet by 20 feet, at the main entrance, the building will be similar to that destroyed. The building will be of wood, 125 feet by 210 feet, exclusive

of the porches, and consists of a riding hall 73 feet by 199 feet, four sheds 73 feet by 26 feet, two sheds 55 feet by 26 feet, and gymnasium 74 feet by 25 feet, with an assembly room over of the same size.

Plans, &c., prepared and work supervised by this Department.

Clerk of Works, Mr. H. T. Peters.

Contractor, Mr. J. Stewart, Ottawa.

## PROVINCE OF BRITISH COLUMBIA.

### KAMLOOPS.

#### INDIAN INDUSTRIAL SCHOOL.

On 4th June, 1889, a contract was entered into for the construction of three wooden buildings on stone foundations, as follows:—

*Central Building.*—To consist of a main building, 31 feet by 34 feet, and an annex 25 feet by 18 feet; to contain on the ground floor a large diningroom, a Superintendent's sitting room, a Superintendent's office, a kitchen and a hall; and on the first floor two school rooms, a sick room, a Superintendent's bedroom and closets.

*Boys' Building.*—A building 40 feet 9 inches by 33 feet 6 inches, to contain on the ground floor a boys' play-room, a dormitory, a tailor's room, a teacher's room, a lavatory, two bath-rooms and a hall; and on the first floor two boys' dormitories, a teacher's bedroom, a spare room, a passage and closets.

*Girls' Home.*—A building 30 feet 6 inches by 22 feet, to contain on the ground floor a laundry, an ironing room and a drying room; and on the first floor two girls' dormitories, a servants' bedroom and closets.

Plans, &c., prepared by this Department, and work being carried out under the supervision of Mr. F. C. Gamble, C.E.

Clerk of Works, J. T. Burnyeat.

Contractor, Mr. John D. Ross, Kamloops.

### KUPER.

#### INDIAN INDUSTRIAL SCHOOL.

A contract for the construction of these buildings, which are similar to those at Kamloops, was entered into on the 27th May, 1889, and they are being carried out under the supervision of Mr. F. C. Gamble, C.E.

Clerk of Works, Mr. Walter Ford.

Contractor, Mr. William Rockett.

### NANAIMO.

#### POST OFFICE, &c.

Some minor repairs to the roof were executed.

### NEW WESTMINSTER.

#### PENITENTIARY.

On the 23rd April, 1889, a contract was entered into for the construction of a two-story wooden building, on a stone foundation, to be used as a residence for the Warden of the Penitentiary. This will have a main building 55 feet by 48 feet, and a wing 30 feet 6 inches by 20 feet, containing on the ground floor drawing room, dining room, library, bedroom, hall, kitchen, scullery, pantry and conservatory, and on the first floor seven bedrooms, bathroom and hall.

The dwelling for single officers referred to in my last report has been completed, a verandah along the front added, the sitting and dining rooms furnished with grates, and the building heated with stoves throughout.

A cow-house was built by convict labor with material supplied by this Department.

Gas was laid throughout the grounds, cast-iron lamp-posts erected, and several extra gas lights placed in the main building.

Some alterations and repairs to the water service were made.

Several improvements to the bakery were made.

An alarm bell was set up in a suitable tower on the roof of the prison.

Works carried out under the supervision of Mr. F. C. Gamble, C.E.

Contractors for warden's residence and cottage, Messrs. Ackerman Bros, New Westminster.

#### PUBLIC BUILDING.

Minor general repairs were made and several articles of furniture supplied to the Post Office portion of the building, and latrines were substituted for the earth closets.

Works executed under the supervision of Mr. F. C. Gamble, C.E.

#### VANCOUVER.

##### POST OFFICE, &c., BUILDING.

A site on the corner of Pender and Granville streets, with frontages of 130 feet and 75 feet, respectively, was offered, and plans and specifications for the building are now being prepared by this Department.

#### VICTORIA.

##### CUSTOM HOUSE.

Repairs to gas and water pipes, water tank, wash-basin, &c., &c., under the supervision of Mr. F. C. Gamble, C.E.

##### POST OFFICE.

Repairs were made to the fire walls. New fittings for the Postmaster and letter carriers were supplied, a stamp vendor's stall was erected, stoves were supplied, and gas fittings re-arranged for the Money Order Branch.

Works executed under the supervision of Mr. F. C. Gamble, C.E.

#### GENERALLY.

Usual and ordinary repairs were made, furniture supplied, cleaning and coloring done and minor alterations made to a large number of buildings not herein referred to.

#### WATER FOR DOMINION BUILDINGS.

The water supply of the various Dominion buildings, excepting penitentiaries and military buildings, is under the control of this branch of the Department. Fifty-four buildings at thirty-three localities have water services connected with the water supply of the local waterworks companies, the remainder being in general supplied with wells, pumps and tanks.

#### LIGHTING DOMINION BUILDINGS.

The lighting of the various Dominion buildings, excepting the penitentiaries and military buildings, is under the control of this branch of the Department. Sixty buildings, exclusive of those at Ottawa, were lighted by gas supplied by local companies, two buildings by incandescent electric light, one by gasoline and the remainder by coal oil. At four of the last mentioned an arc light was used for outside illumination.

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### HEATING DOMINION BUILDINGS (FUEL).

Tenders for the supply of coal for Public Buildings, generally, were invited by public advertisement, and coal and wood were supplied to eighty-eight of the public buildings.

### ENGINEERS, ENGINEMEN, FIREMEN, &c., PUBLIC BUILDINGS.

The various engineers, enginemen, firemen and caretakers, and the heating apparatus of Dominion Public Buildings, with the exception of those at the various penitentiaries and the military buildings, are under the control of this branch of the Department.

THOMAS FULLER,

*Chief Architect.*

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APPENDIX No. 3.

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LIST

OF

ENGINEERS, ENGINEMEN, FIREMEN AND CARETAKERS

OF

PUBLIC BUILDINGS THROUGHOUT THE DOMINION,

GIVING

DATE OF APPOINTMENT, SALARY PAID, &C.

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Ref. No. 103,121.

## STATEMENT showing the Engineers, Enginemen, Firemen, Watchmen, and other persons employed by the Public Works Department, in the City of New York, for the year 1888.

Place.	Building.	Name.	Position.	Date of Appointment.	Salary per Month.	Time Employed per Annum.	Total Salary per Annum.	
Anherst.	Post Office.	James Morrison.	Caretaker.	November 2, 1886.	\$ 33 33	12 months.	400 00	
Antigonish.	Public Building.	H. P. Hill.	do	March 1, 1887.	3 75	12 do	45 00	
Aricat.	Building on P. O. site.	John McAskill.	do	September 16, 1887.	1 25	12 do	15 00	
Badeek.	Public Building.	Alex. S. McDonald.	do	December 23, 1886.	16 07	12 do	200 00	
Halfax.	Dominion Building.	John Powell.	Engineer.	October 1, 1871.	62 50	12 do	750 00	
do	do	Richard Power.	Fireman.	do	1 1871.	50 00	9 do	450 00
do	do	M. Sullivan.	Caretaker.	31, 1885.	33 33	12 do	400 00	
do	do	John Dunn.	Watchman.	1, 1887.	39 00	12 do	468 00	
do	Examining Warehouse.	Wm. Power.	Caretaker.	26, 1887.	41 67	12 do	500 00	
New Glasgow.	Post Office.	Jeff. Fraser.	Temporary Caretaker.	October 1, 1888.	33 33	12 do	400 00	
North Sydney.	Public Building.	C. F. Moffatt.	do	February 6, 1889.	33 33	12 do	400 00	
Pictou.	Custom House.	Geo. Robson.	Caretaker.	January 31, 1888.	33 33	12 do	400 00	
Truro.	Post Office.	Hugh McCulloch.	do	September 27, 1888.	33 33	12 do	400 00	
Windsor.	do	J. W. Smith.	do	July 20, 1886.	33 33	12 do	400 00	
Yarmouth.	Public Building.	Robert Speers.	do	December 23, 1886.	33 33	12 do	400 00	
Charlottetown.	Dominion Building.	D. McLeod.	Engineer.	September 12, 1872.	33 33	12 do	400 00	
do	do	J. S. McLeod.	Fireman.	December 13, 1887.	28 00	12 do	336 00	
do	do	James Grant.	Watchman.	August 18, 1881.	37 00	12 do	444 00	
do	do	George Walker.	do	January 19, 1875.	37 00	12 do	444 00	
Montague.	Public Building.	Martin Lambert.	Caretaker.	January 12, 1887.	10 00	12 do	120 00	
Summerside.	Dominion Building.	James Brazil.	do	November 5, 1885.	33 33	12 do	400 00	
Bathurst.	Post Office.	J. A. Melancon	do	April 13, 1887.	33 33	12 do	400 00	
Fredericton.	do	Jas. Perkins.	do	May 31, 1881.	33 33	12 do	400 00	
Moncton.	do	E. B. Hicks.	do	January 11, 1886.	33 33	12 do	400 00	
Newcastle.	do	Patrick Keating.	do	October 2, 1886.	33 33	12 do	400 00	
St. Stephen.	do	Samuel Topping.	do	May 25, 1887.	33 33	12 do	400 00	
St. John.	Custom House.	Thos. Asbill.	do	October 19, 1883.	33 33	12 do	400 00	
do	do	G. H. Jones.	Engineer.	February 17, 1880.	60 00	12 do	720 00	
do	do	Christopher White.	Fireman.	November 9, 1885.	50 00	6 do	300 00	
do	do	T. W. Shaw.	Caretaker.	December 8, 1881.	41 67	12 do	500 00	
do	Post Office.	Henry Howe.	Engineer.	November 4, 1881.	55 00	12 do	660 00	
do	do	Ed. Hancy.	Hotel Attendant.	do	27, 1882.	45 00	12 do	540 00



do	Penitentiary	Gen. Campbell	Caretaker	October 20, 1880	37	50	12	do	400 00
Windsor	Post Office	Richard Maxted	do	do	33	53	12	do	400 00
Windsor	Public Building	Israel Baldwin	do	June 27, 1885	33	53	12	do	400 00
Hull	Post Office	Thomas Paquin	do	June 9, 1888	15	64	12	do	200 00
Montreal	Dominion Building	Thomas Ryan	Foreman Engineer	March 4, 1882	85	00	12	do	1,020 00
do	Examining Warehouse	M. Boyer	Fireman	do	50	00	12	do	500 00
do	Post Office	John Watson	Engineer	October 18, 1882	65	00	12	do	780 00
do	do	L. D. Thibault	Electric Light and Hoist Attendant	do	60	00	12	do	720 00
do	Inland Revenue	F. Greene	Engineer	June 1, 1885	60	00	12	do	720 00
do	Custom House	W. Wallace	Fireman	January 1, 1885	50	00	8	do	400 00
do	do	J. H. Marchand	do	October 1, 1882	50	00	8	do	400 00
do	Drill Hall and Armories	Wm. McDonald	Engineer	December 21, 1888	45	00	12	do	540 00
Quebec	Examining Warehouse	Jas. Mathews	Engineer	February 2, 1885	55	00	12	do	600 00
do	do	Wm. Stephens	Fireman	December 4, 1885	40	00	8	do	320 00
do	Cullers' Office	John O'Neil	do	October 23, 1884	45	00	8	do	360 00
do	Public Building	Thos. Rawson	Caretaker	September 12, 1884	33	53	12	do	400 00
Sorel	do	P. St. Michel	do	September 22, 1886	33	53	12	do	400 00
St. John	Post Office	Widow J. Forrant	do	May 30, 1888	15	65	12	do	200 00
do	do	Wm. Comper	Watchman	December 28, 1881	12	50	12	do	150 00
Three Rivers	Custom House	J. B. Gerin-Lajoie	Caretaker	December 18, 1888	58	53	12	do	700 00
do	Post Office	Jas. Charbonneau	do	July 27, 1883	33	53	12	do	400 00
Ont.	Public Building	John Lovagrove	do	November 5, 1885	33	53	12	do	400 00
Amherstburg	do	Wm. Shepherd	do	April 6, 1888	33	53	12	do	400 00
Brockville	Post Office	John Squares	do	October 27, 1880	50	00	12	do	600 00
Brantford	Public Building	Fred Edwards	do	March 2, 1886	33	53	12	do	400 00
Barrie	do	J. P. Reeves	do	October 17, 1883	50	00	12	do	600 00
Belleville	do	Widow Aug. Meinke	do	December 22, 1887	33	53	12	do	400 00
Berlin	do	Gilbert Campbell	do	October 8, 1885	33	53	12	do	400 00
Clifton	do	Henry Dunn	Engineer	September 23, 1884	50	00	7	do	350 00
Chatham	Post Office	W. W. Mitchell	Caretaker	January 7, 1885	33	53	12	do	400 00
do	do	Thos. Murphy	do	March 7, 1885	30	42	12	do	305 00
Cornwall	Public Building	Thos. Petalack	do	September 28, 1887	15	00	12	do	180 00
Cobourg	Post Office	Wm. Kilgour	do	do	33	53	12	do	400 00
Galt	Public Building	A. H. Gooden	do	August 26, 1884	33	53	12	do	400 00
Guelph	do	Thos. P. Richardson	do	May 1, 1884	8	33	12	do	100 00
Gananoque	do	Wm. Hornby	do	October 9, 1886	50	00	12	do	600 00
Hamilton	do	Thos. Nicholson	Engineer	March 2, 1887	50	00	12	do	600 00
do	do	Thos. Beatty	Fireman	November 7, 1887	45	00	12	do	540 00
do	do	Wm. Johnson	Engineer	May 31, 1881	65	00	12	do	780 00
Kingston	Military College	M. Madden	Fireman	October 12, 1878	55	00	6	do	330 00
do	do	M. Mulckern	Engineer	September 18, 1888	50	00	12	do	600 00
London	Custom House	Wm. Greer	Caretaker	March 16, 1884	33	53	12	do	400 00
do	Post Office	John Price	Engineer	January 14, 1884	50	00	12	do	600 00
do	Public Building	John Wilkins	Caretaker	September 15, 1886	33	53	12	do	400 00
Orangeville	do	John Irwin	do	do	33	53	12	do	400 00
Peterborough	do	Wm. Armstrong	do	June 11, 1888	20	00	12	do	240 00
Port Colborne	do	Levi Reynolds	do	November 17, 1888	33	53	12	do	400 00
Port Hope	do	F. H. Roberts	Engineer	February 7, 1884	50	00	12	do	600 00
Stratford	do	Wm. Bryson	Caretaker	August 9, 1883	33	53	12	do	400 00
St. Catharines	do	Jas. Russell	do	September 4, 1886	33	53	12	do	400 00
St. Thomas	do	do	do	do	33	53	12	do	400 00

(APPENDIX No. 3)—STATEMENT showing the Engineers, Enginemen, Firemen, Caretakers, Hoist Attendants and Watchmen employed at Dominion Public Buildings, on 30th June, 1889—Continued.

Place.	Building.	Name.	Position.	Date of Appointment.	Salary per Month.	Time employed per Annum.	Total Salary per Annum.
					\$ cts.		\$ cts.
Toronto.	Dominion Building.	J. A. Wills.	Foreman Engineer.	August 23, 1873.	125 00	12 do	1,500 00
do	Custom House.	Jos. Humphreys.	Fireman.	November 16, 1881.	50 00	6 do	300 00
do	Revenue Building.	F. Simmons.	do	January 21, 1887.	50 00	6 do	300 00
do	Examining Warehouse.	Jas. Cosgrave.	Engineer.	December 28, 1874.	65 00	12 do	780 00
do	do	Ed. Appleton.	Fireman.	September 23, 1886.	55 00	12 do	660 00
do	do	Alex. Day.	Hoist Attendant.	December 1, 1887.	45 00	12 do	540 00
do	do	Wm. Chinery.	do	do 1, 1887.	45 00	12 do	540 00
do	do	Wm. J. Shean.	do	March 2, 1888.	45 00	12 do	540 00
do	do	Jas. Richardson.	Watchman.	September 3, 1885.	1 50 per day.	do	547 00
do	do	Henry L. Bell.	Engineer.	May 9, 1885.	50 00	6 months.	300 00
do	Post Office.	Wm. Woods.	Fireman.	October 5, 1888.	50 00	6 do	300 00
do	do	James Claxton.	do	do 25, 1882.	50 00	6 do	300 00
Windsor.	do	F. Parker.	Engineman.	do 3, 1888.	50 00	12 do	600 00
do	do	W. Curtis.	Caretaker.	November 9, 1880.	33 33	12 do	400 00
Winnipeg.	do	J. P. Alexander.	Engineman.	June 1, 1888.	70 00	12 do	840 00
do	do	Patrick Dillon.	Fireman.	January 1, 1889.	45 00	6 do	270 00
do	do	Jos. Conu.	Hoist Attendant.	March 16, 1887.	45 00	12 do	540 00
do	do	Ernest Lecourt.	Watchman.	October 27, 1888.	45 00	12 do	540 00
do	do	Jos. Cauchon.	Caretaker.	June 12, 1888.	50 00	12 do	600 00
Prince Albert.	Court House and Jail.	George Northgraves.	do	do 14, 1887.	33 33	12 do	400 00
Nanaimo.	Public Building.	John Thompson.	do	November 10, 1883.	50 00	12 do	600 00
New Westminster.	do	John McMurphy.	do	October 1, 1884.	50 00	12 do	600 00

R. STECKEL.

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APPENDIX No. 4.

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REPORT

ON THE

HEATING APPARATUS, GAS, WATER AND BELL SERVICES, &c.

IN THE

PUBLIC BUILDINGS, OTTAWA,

FOR THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1889,

BY

JOHN R. ARNOLDI, CHIEF MECHANICAL ENGINEER.

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## APPENDIX No. 4.

### REPORT OF THE CHIEF MECHANICAL ENGINEER.

Ref. No. 101,754.

CHIEF MECHANICAL ENGINEER'S OFFICE,  
OTTAWA, 28th August, 1889.

SIR,—I have the honour to report as follows, in reference to the Public Buildings, Ottawa, during the fiscal year ended the 30th June, 1889, viz. :—

#### PARLIAMENT BUILDING.

Nothing was required to be done during the past year to electrical apparatus, boilers, water, gas or bell service of this building beyond ordinary maintenance.

Owing to the alterations of the Speaker's apartments of the Senate it was found necessary to change and extend the ventilation and heating apparatus in the vicinity of these premises.

The ventilation of the Railway Committee room was also much improved by increasing the capacity of foul air-discharge ducts.

#### EAST AND WEST BLOCKS.

Nothing was required to be done in these buildings, beyond ordinary maintenance to heating apparatus, boilers, water, gas and bell services.

#### SUPREME COURT.

Ordinary maintenance to the heating apparatus, gas, water and bell services was all that was required.

#### OTTAWA POST OFFICE AND CUSTOM HOUSE.

Ordinary maintenance only was required to the heating apparatus, boilers, gas, water and bell services.

#### GEOLOGICAL MUSEUM.

Ordinary maintenance only to water, gas and bell services was required.

#### PARLIAMENT GROUNDS—FLOWER PROPAGATING HOUSE.

Ordinary maintenance only required.

#### INDIAN AFFAIRS (LEASED).

Ordinary maintenance only to water, gas and bell services was required.

#### POST OFFICE DEPARTMENT (LEASED). SAVINGS BANK BRANCH.

Three new waterclosets were placed in this building during the past year ; otherwise, ordinary maintenance to gas, water and bell services only was required.

#### MAJOR'S HILL PARK.

Ordinary repairs only were required to the water main, hose, &c., used for sprinkling.

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**FISH HATCHERY AND ART GALLERY.**

An extension of gas fixtures and one new water closet were found necessary.

**RIDEAU HALL.**

Eleven old-pattern pan waterclosets were removed and replaced by an improved sanitary pattern, which were urgently required. The hot water service was thoroughly overhauled and a new coil furnace put in for heating the water for baths, &c.

In the Secretary's cottage two new water closets were supplied.

Beyond ordinary maintenance and repairs to the general services of heating, water, gas and bells, nothing further was required.

I have the honour to be, Sir,

Your obedient servant,

JNO. R. ARNOLDI,

*Chief Mechanical Engineer.*

A. GOBEL, Esq.,  
Secretary, Public Works Department.  
Ottawa.

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APPENDIX No. 5.

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REPORT.

ON

HARBOURS AND RIVERS, DREDGES, DREDGING AND SURVEYS

THROUGHOUT THE DOMINION

FOR THE FISCAL YEAR ENDED 30TH JUNE, 1889.

BY

HENRY F. PERLEY, CHIEF ENGINEER.

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## APPENDIX No. 5.

## REPORT OF THE CHIEF ENGINEER.

Ref. No. 103,848.

CHIEF ENGINEER'S OFFICE,  
OTTAWA, 27th November, 1889.

SIR,—I have the honour to submit herewith my annual report on the harbour works under my charge during the last fiscal year.

I have the honour to be, Sir,  
Your obedient servant,  
HENRY F. PERLEY,  
*Chief Engineer.*

A. GOBEIL, Esq.,  
Secretary Public Works Department,  
Ottawa.

## PRINCE EDWARD ISLAND.

## ANNANDALE.

This Pier is in King's County, and is situated on the north side of Grand River, near its entrance into Boughton Bay. It is distant 14 miles by road, south from Souris, the eastern terminus of the P. E. I. Railway, and is the shipping place for a large agricultural district. The exports are agricultural produce and fish, and the imports consist principally of general merchandise and coal.

The pier is one of those constructed by the Local Government and taken over by the Dominion Government, and consists of an approach 300 feet in length and 23 feet wide, with a pier head 140 feet long, averaging 36 feet in width. The approach, excepting a short open span which is planked over, is constructed of squared timber crib-work, filled in with brush, stone and clay. The pier head consists of four blocks of different shapes and dimensions, constructed of squared timber crib-work, and of pile work, the whole being covered over with plank.

During 1884-85 such repairs as were absolutely necessary to make it serviceable for the seasons traffic were effected by the Department, the principal work done consisting in the close-piling of the western end of the face for a distance of 85 feet. During the last fiscal year the face, for a distance of 55 feet, and the ends, were close-piled; 22 piles were driven in the inside of the work to replace worm-eaten ones, and where necessary the planking on the top was renewed.

At low water springs, which rise here 5 feet, there is a depth of 7 feet of water at the channel face of the pier head, and the beach dries out to within 15 feet of the face.

## BELFAST PIER.

Belfast Pier, Queen's County, is situated on the south side of Orwell Bay, about one mile distant from the village of Eldon. It was constructed many years ago by the Local Government to accommodate the shipment of produce from the neighborhood. Besides being an important shipping place, it is also a port of call for the steamers of the P.E.I. Navigation Co., plying during the season three times each week between Charlottetown and Orwell Bay.

The pier is 600 feet in length and from 24 to 35 feet in width, with an "L" at the outer end 105 feet in length and 20 feet wide, giving a channel face of 140 feet. The work along the channel face is from 16 to 18 feet in height, and the depth of water varies from 5 to 7 feet at low water springs, which rise here 8 feet. At 10 feet from the face the depth increases to 9 feet, and the beach dries out at low water springs to within 200 feet of the outer end. Excepting two small openings, the work is constructed with squared timber faces, the inner end, for a distance of 390 feet, being filled in with brush and clay, while the outer end and the "L" are floored over.

During 1884-85, when the pier was taken over by the Dominion Government, it was strengthened by placing fenders along the channel face, and some slight repairs were made to the top by placing new planking where required.

During 1887-88 repairs were executed on the western end of the L., and along the channel face and end of this portion piles were placed, 5 feet apart, to replace those which had been placed in 1884-85, as they, weakened by the teredo, had been carried away by the ice.

The amount set apart for repairs to the pier last year was expended in the removal of a portion of the eastern end of the "L," and in its reconstruction, and the ballasting of and renewal of planking on the western end of the "L," and in levelling up and repairing the worst portion of the approach.

#### CAMPBELL'S COVE BREAKWATER.

Campbell's Cove, King's County, is situated on the north coast of the island, about 9 miles west from East Point and 14 miles distant from Souris, the eastern terminus of the P.E.I. Railway.

In 1872 the Provincial Government constructed a detached breakwater, 300 feet in length and 30 feet wide, on the reef which extends out from the west point of the cove, for the protection of small fishing vessels and boats.

During 1882-83 the Department repaired the old structure, raised it 2 feet in height, connected it with the shore, extended it 250 feet, making its total length 620 feet. The whole work is substantially constructed of squared timber, the faces of the old portion and the connection with the shore being built plumb, while the extension has a timber slope of 1 to 1 on the seaward side. The depth of water at the outer end at low water springs is 4 feet, and spring tides rise 4 feet.

The breakwater protects the eastern part of the cove from north and north-easterly winds, but during easterly and south-easterly ones it is entirely exposed to the force of the sea.

During the last fiscal year two fenders, a few planks and some ballast were replaced in the sloping face, as well as some ballast in the outer end of the work.

#### CASCUMPEC.

Casumpec Harbour, Prince County, is situated on the north coast of the Island, about 17 miles to the southward of North Cape, and about 20 miles to the north-westward of the entrance into Richmond Bay. The town of Alberton, the second one in importance in the county, is located at the head of the harbour, and is a station on the Prince Edward Island Railway which has a branch to the Railway wharf, where vessels can load and discharge.

A large amount of produce is shipped yearly from the wharves at Alberton, and the harbour being commodious and perfectly safe, with a depth of water sufficient to accommodate sea-going vessels, it is sought as a harbour of refuge during easterly gales, and as many as 100 fishing vessels, principally American, have been counted at one time.

The entrance into the harbour is obstructed by two bars; the outer one, composed of sand, lies about a mile from the entrance, and the inner "bar," which is composed of very soft sandstone, is between the beaches which form the entrance. The bars are about 1,000 feet in width, and carry a depth of 10 feet of water at low water springs, which rise 3 feet.

It is proposed to make a cut through the inner bar 100 feet in width, with a depth of 15 feet at low water, so as to admit of a larger class of vessels entering the harbour.

The work was commenced by the Department in 1885, by sub-marine blasting, and it has been continued every season since; but owing to the short time in which operations can be carried on successfully (about 4 months in the year), the softness of the material, which blasts badly and is reduced to very small fragments, and the exposure of the work to easterly storms, the work has not progressed as rapidly as was expected.

With the amount voted during the last fiscal year a cut 150 feet in length, 25 feet wide, and to a depth of 15 feet at low water, has been made, the material blasted and removed amounting to 450 cubic yards.

The amount of material still to be removed to accomplish the cut as proposed is 10,800 cubic yards in place, or 15,100 cubic yards scow measurement.

#### CHARLOTTETOWN.

Charlottetown, the capital of the Province, is situated on a neck of land between the North and Hillsboro' Rivers, in Queen's County.

Much dredging was done at the expense of the owners or lessees, with the view of obtaining deeper water, and consequently greater loading facilities at the wharves of the Steam Navigation Company, the wharf the property of the Connolly estate, Messrs. Peake, Bros. & Co.'s wharf, and the wharf belonging to the Prince Edward Island Railway, the whole being situated in the harbour of Charlottetown.

#### GEORGETOWN PIER.

Georgetown, the shire town of King's County, is situated on the western side of the Montague River, near the entrance into Cardigan Bay, and is one of the termini of the P.E.I. Railway. Its harbour is well known as being one of the best and safest in the island.

The public wharf, known as the Queen's Pier, was constructed by the Local Government between 1873 and 1882, and was handed over to the Dominion Government in 1884. It is composed of a shore abutment 340 feet in length, and of six blocks from 25 to 33 feet long, with intervening spaces. Its total length is 642 feet and its width varies from 25 to 33 feet.

During 1884-85 the Department close-piled the outer faces of the blocks and the end, and in the year 1886-87 the outer end of the eastern side of the shore abutment, for a distance of 60 feet, was partially re-built, and all the spans received new planking.

During the last fiscal year some of the close-piling was re-fastened, three mooring posts were put in, the cap timbers, where necessary, were renewed, and the filling in the blocks and shore abutment, which had settled, was raised to the level of the planking on the spans, with brush, stone and gravel.

At the end of the pier there is a depth of 12 feet at low water springs, and low water mark extend to within 350 feet of the outer end. Spring tides rise 5 feet, and the class of vessels loading and discharging at the pier are large-size schooners drawing up to 10 feet of water.

#### HICKEY'S PIER.

Hickey's Pier, Queen's County, is situated on the south-eastern side of the Hillsboro' River, about 10 miles distant from the city of Charlottetown, and about 5 miles from Pisquid station of the P.E.I. Railway.

The Hillsboro' River being navigable about 15 miles above Charlottetown, is the most important on the island, and Hickey's Pier, since the channel at its end and berths on each side were dredged by the Department, is the first in importance on the river.

A large amount of produce is annually shipped from the pier, and considerable lumber and coal are imported, the trade being carried on by the schooners. During the season a steamer from Charlottetown calls at this pier three times a week.

The structure is 428 feet in length, and of width ranging from 22 to 29 feet, the latter width extending inwards from the outer end for 180 feet.

During 1884-85 the shore abutment was levelled up over a distance of 120 feet with stone and clay, thence for a distance of 145 feet the top was stripped and new floor stringers, planking, cap and fenders were placed, thence for 60 feet the work was newly planked, and on the outer block the defective planking was renewed.

During 1887-88 part of the covering on the outer block was renewed, fifteen piles were driven around it and a new landing slip built in its outer face; the shore abutment for a distance of 90 feet was re-built and re-filled with brush, stone and clay.

During the last fiscal year the narrow block built along the eastern face of the outer end, which was in danger of tumbling into the dredged channel, was renewed and replaced by a new block, its top extending over the old main blocks, and new floor-stringers and planking were placed upon the spans and the outer block.

The depth of water at low water springs, at the end and for a distance of 113 feet on each side of it, is  $4\frac{1}{2}$  feet, and as spring tides rise  $9\frac{1}{2}$  feet, that depth increases to 14 feet at that time of tide.

#### LEWIS POINT PIER.

This pier is in King's County, and is situated on the northern side of Cardigan River, a short distance below Cardigan Bridge, the head of navigation for vessels on the river, and about eight miles from its entrance into Cardigan Bay. Cardigan Station, on the P. E. I. Railway, is about half a mile from the pier.

The imports consist principally of lumber and coal, and the exports of potatoes and oats, and the trade is carried on by middling-sized schooners.

This pier is 575 feet in length, and is composed of a shore abutment 365 feet, of two blocks each 35 feet, and of an outer block 79 feet in length, with intervening spaces, each about 20 feet wide, out to the outer block, which is 33 feet wide. The outer end stands in 7 feet of water at low water springs, which rise here 5 feet, and the beach at low water dries out to within 140 feet of the end.

In 1884-85 a small amount was expended in making it fit for traffic.

During the last season the flooring and floor stringers were renewed, and new caps were placed where necessary, and the roadway on the shore abutment and on the blocks was levelled up with brush and stone.

#### MALPEQUE.

Malpeque Harbour, Prince County, lies within the eastern entrance of Richmond Bay, on the north shore of the Island, about 90 miles from East Point and 40 miles from North Cape.

During 1877-78-79 a breakwater, 600 feet long, having 18 feet at its outer end at low water springs, was built by the Department on the western end of the "Royalty Sands," on the eastern side of the harbour, to shelter the anchorage from north-east winds, which throw a heavy sea through the eastern channel, and to afford a ship-  
ping place for the produce of the surrounding country.

The tides in Richmond Bay are very irregular, being controlled by the winds, easterly winds causing higher tides and westerly winds producing a contrary effect. In perfectly calm weather spring tides rise 3 feet, neap tides 2 feet.

Owing to the construction of the breakwater, the sands inside of the breakwater wasted away with the action of tides during easterly storms, and to prevent this wasting a breast-work, 450 feet in length, was constructed from the inner end of the breakwater running towards Royalty Point.

During 1882-83, as the wasting away of the sands between the inner end of the breast-work and the "Point" continued, the breast-work was continued inwardly to the "Point," a distance of 1,920 feet.

On the 15th of December, 1889, the work was visited by a heavy north-east gale, accompanied by an unusually high tide, and the breakwater, as well as the breast-work, were seriously damaged, and during the last fiscal year the damage done was made good.

#### NORTH CARDIGAN.

North Cardigan Pier, King's County, is situated on the north side of the Cardigan River, near its entrance into the bay of the same name, and is distant about 6 miles from Cardigan Bridge, the head of navigation and a station on the P. E. I. Railway.

The pier is used for the shipment of produce, and was constructed by the Local Government many years ago for the benefit of a large agricultural district. Its total length is 383 feet, and it consists of a shore abutment and seven blocks, with intervening openings, the latter being spanned over and planked. It is from 23 to 25 feet wide out to the outer block, which has a width of 32 feet. The abutment is 100 feet in length, the blocks from 19 to 25 feet, and the spans from 14 to 26 feet long. The abutment and all the blocks are constructed of squared timber faces, filled in with brush, stone and clay, excepting the two outer blocks, which, as well as all the spans, are planked over.

The depth of water at the outer end is 5 feet at low water springs, increasing to 7 feet at a distance of 10 feet from the outer face. Spring tides rise 5 feet, neaps 3 feet, and the mud flats dry out to within 170 feet of the outer end.

On its assumption by the Dominion Government during 1884-85 the two outer blocks of the pier were close-piled, and during 1885-86 the flooring on the outer block was renewed and the top of the inner blocks and shore abutment were levelled up with brush and stone.

During the last fiscal year all the span-beams, the flooring (excepting on the outer block) and the cap were renewed, and the shore abutment, as well as the inside blocks, were levelled up with brush, stone and clay.

#### NORTH RUSTICO.

Rustico, Queen's County, is the most important fishing station on the northern coast of the Island, and is nearly equi-distant from the North and East Points, and about 9 miles from Hunter River Station, on the P. E. I. Railway.

The harbour is of good size and well sheltered, but the entrance is rendered difficult by a bar of sand overlying clay, the channel through which shifts frequently, and in which the depth was not more than 6 feet at low water, and sometimes after a long duration of north-east winds even less. The depth inside the entrance is 10 feet at low water springs, which rise here 3 feet.

Between 1881 and 1884 the Department constructed two breakwaters on each side of the entrance, that on the north side being 1,240 feet in length and on the south side 450 feet, for the purpose of concentrating the ebb current upon the bar, in order to scour away the sand and obtain a greater depth of water over it. The results have been most satisfactory, and the depth on the bar has been increased from 3 to 4 feet, which, added to the former depth, gives at low water springs from 9 to 10 feet.

In 1886-87 repairs were made on the sloping face of the north breakwater, and at the outer end a number of piles were replaced.

During the last fiscal year 17 feet of the outer end of the north breakwater, which was in a wrecked condition, was cut away, the new end was close-piled, the top re-ballasted and other work executed.

#### PINETTE.

Pinette Harbour, Queen's County, is on the north side of Northumberland Strait, 4 miles east of Point Prim and 12 miles north of Wood Island. It is situated at the mouth of Pinette River, and extends about  $2\frac{1}{2}$  miles inland to Pinette Bridge, the navigable channel being from 200 at the upper end, to 600 feet wide at the lower end, and carrying a depth of water of 3 fathoms at low water springs.

A pier 120 feet in length and 28 feet wide was built on the south side of the channel, below and at right angles to Pinette Bridge, by the Local Government, and connected with the bridge by a span, planked over.

The pier is built along the channel, and has a frontage of 148 feet. During 1881 the dredge "Prince Edward" operated here in deepening the loading berths off the face of the pier, to 8 feet below low water springs.

During 1887-88 the Department raised the channel face of the pier about 12 inches, and made other improvements on the structure.

During the last fiscal year the approach was renewed by placing a new bent underneath and placing additional span beams and new flooring.

#### POWNAI PIER.

Pownal Pier, Queen's County, is situated on Pownal Bay, the north-eastern corner of Hillsboro' Bay, and is distant about 9 miles south-east from the city of Charlottetown, the nearest railway station to the pier.

The pier, which is at the head of the bay, is 753 feet in length, extends out to low water, and was constructed during the years from 1873 to 1882 by the Local Government.

To admit of boats and small craft coming to and leaving the pier at all times of the tide, the Department during 1880-81 dredged a channel up to the pier, 1,275 feet in length, 56 feet wide and from 5 to 6 feet in depth, carrying a depth of from 6 to 9 feet at low water springs, and a basin on the eastern side of the pier 90 feet wide and 250 feet in length.

During 1884-85 such repairs as were absolutely necessary to place the pier in a fit condition for shipping purposes were effected by the Department, and during the past season the span-beams were renewed, nine of the spans replanked and other necessary repairs effected.

#### RED POINT.

Red Point Wharf, Lot 48, Queen's County, is situated on the southern shore of the East River, about 5 miles above Charlottetown.

The water in front of the wharf was deepened to 12 feet at low water, to enable vessels to approach and load at the wharf.

#### SOURIS.

Souris Harbour, Colville Bay, King's County, is about 16 miles to the westward of East Point. It is the principal place of shipment at the eastern end of the Island, and is the terminus of the P. E. I. Railway.

#### SOUTH RUSTICO.

South Rustico Pier, Queen's County, is situated immediately below the Oyster Bed Bridge, at the mouth of Whatley River, which enters Rustico Bay at its southern end. It is distant about 6 miles from Hunter River station, on the Prince Edward Island Railway, and about 13 miles to the northward of the city of Charlottetown.

The pier was constructed by the Local Government between 1873 and 1876, to accommodate the shipping of produce from and the imports of coal and lumber to the locality. It is 593 feet in length, and consists of an approach 450 feet long and 17½ feet in width, and of three detached blocks, about 25 feet apart. The inner block is 17 feet wide and 23½ feet long; the two outer blocks are respectively 29 and 30 feet wide and 20 and 24 feet in length.

At the outer end there is a depth of 6 feet at low water springs, increasing to 10 feet at high water, and the flat dries out at low water to within 340 feet of the outer end.

In 1884-85 the top of the blocks and the approach were levelled up with clay, and portions of the flooring renewed and some fenders replaced.

During the fiscal year ended 30th June, 1889, the outer end was raised and other repairs executed.

During 1875-76-77 the Dominion Government constructed an extension of 896 feet, having a width of 46 feet, to the breakwater built some years previously by the Local Government, on the eastern side of the harbour and off Knight's Point, and raised the old work about 2 feet over its entire length (280 feet) to the level of the new, which was assumed to be 5 feet above high water springs. Spring tides rise  $4\frac{1}{2}$  feet, neaps 3 feet.

During a heavy gale on the 5th of January, 1878, the outer end of the breakwater was carried away to a depth of 10 feet, and in 1878 the work of reconstruction was proceeded with and completed in September, 1880.

During 1880-81 the seaward side of the top of the end of the old breakwater was covered with 6-inch plank.

In 1881-82 a small amount was expended in necessary repairs to the inner end of the original portion of the work.

The sum of \$939.55 was expended in 1883-84 on general repairs and securing a breach in the outer face of the inner portion.

Close-piling the seaward face to protect weakened portions, re-ballasting and renewing floor stringers and planking, where necessary, was carried on during 1885-86.

During 1886-87 the inner end of the work, for a distance of 800 feet, was fully ballasted, and new floor stringers, flooring and cap-timbers placed where necessary.

The centre section for a distance of 290 feet, was raised 2 feet, fully ballasted and new floor stringers, flooring and cap placed: the whole of the seaward face which had been damaged.

#### NOTE.

The paragraphs on page 61, down to "STURGEON," have been misplaced, and refer to "SOURIS."

#### STURGEON.

Sturgeon Bay, King's County, is situated on the south side of Cardigan Bay, about 6 miles south of Georgetown, the shire town of the county and the terminus of the Georgetown Branch of the P. E. I. Railway.

The pier was constructed by the Local Government during the years from 1873 to 1881, to accommodate the shipping of produce from the locality.

Its total length is 436 feet, and is from 20 to 25 feet in width, its height at the outer end is 13 feet, with a depth of 4 feet of water at low water springs, which rise 5 feet.

The pier was generally repaired and put in good order during the past fiscal year.

#### TIGNISH.

Tignish Harbour, Prince County, is situated on the north coast of the Island, about 6 miles southwardly from North Cape, and is really the mouth of the Big Tignish River.

As the coast in the vicinity of the mouth of the river is straight and has no protection from projecting head lands, gales from the north-east to south-east cause an unbroken sea to run in, and as the bottom is composed of shifting sand, the entrance was at times completely blocked up, until broken through again by the force of the water inside.

The construction of a breakwater on either side of the mouth of the river to contract the channel and increase the velocity of the current was begun by the Provincial Government in 1868, and up to 1875, when the Island entered into Con-

federation, the amount of \$8,149.56 had been expended. The north breakwater was built 830 feet in length and 21 feet in width, and that on the southern side 300 feet in length and 20 feet in width, with an opening of 45 feet between them.

During 1875-76 the Department re-constructed the top of the north breakwater, which was badly wrecked, to a height of 5 feet above high water springs, and built a new block at the outer end 40 feet in length by 41 feet in width.

In 1877-78 the south breakwater was raised and repaired; and the end of the north breakwater having been undermined by the action of the sea, was raised to its original level during 1879-80.

In November, 1879, the north breakwater was again damaged, and during 1880-81 the block at its outer end was close-piled and the south breakwater repaired and its outer end close-piled.

During 1881-82 portions of the north breakwater were rebuilt and repaired, and a brush, pile and stone breast-work was constructed on the beach to the northward of the breakwater; a similar breast-work, 150 feet in length, was constructed on the south beach, and the corner formed between the north breakwater and the block at its end, for a distance of 100 feet along the face, was filled with brush and stone.

As it appeared that the breastwork constructed on the north side of the harbour did not extend sufficiently far to prevent the sea from cutting through the beach it was extended during 1884-85-86, a distance of 1,875 feet to the high land; at the same time the seaward face of the north breakwater, over a length of 540 feet, was protected by a brush and stone slope.

During 1886-87 the dredge "Prince Edward" operated in deepening between the breakwaters and in the basin inside.

During the last fiscal year some planks and close-piling on the outer block of the northern breakwater were replaced, and a quantity of brush and stone placed at points of the breast-work where required; and the piling at the inner end of the south breakwater was protected by a brush and stone backing.

Prior to the commencement of improvements at the mouth of the Tignish River, there was only a depth of 1 foot at low water, and only such boats as could be hauled upon the beach could enter. Since the completion of the works the depth, which depends to some extent on the prevalence of easterly winds, has never been less than 5 feet during low water springs, and is generally more. Spring tides rise 3 feet, neaps 2 feet.

## NOVA SCOTIA.

### ARISAIG.

Arisaig, Antigonish County, is on the south-east shore of Northumberland Strait, 15 miles east of Merigomish, the nearest harbour.

The pier at this place was commenced by the Government of Nova Scotia about forty-six years ago, and came under the charge of the Federal Government in 1870. It was put in thorough repair in 1873, and small amounts were expended in 1880 and 1881 in repairing damage caused by ice.

In 1886 a contract was entered into for repairs to the pier and for the construction of a breakwater on the eastern side of the harbour to arrest the travel of sand from the south-west. The works under contract were completed in October, 1888.

The pier is 440 feet in length; the outer portion, 195 feet in length, is from 40 to 44 feet wide. The depth at the outer end was originally 8 feet at extreme low water; there is now at extreme low water a depth of 1 foot along the inner face, over a distance of 100 feet from the outer end, and over the sheltered area nowhere more than 3 feet.

The breakwater is 300 feet in length and 20 feet in width on top, and has an L at the outer end 40 feet in length. It is constructed of square timber, close-faced, and is full ballasted and protected at the outer end by close fendering. The depth at the outer end at extreme low water is 6 feet. Spring tides rise 5 feet.



During the year (1888-89) a contract was entered into for extending the pier 100 feet, and for protecting its seaward face by a deposit of heavy stone; but up to its close no work except in the way of procuring material had been done.

#### BARRINGTON.

Barrington is situated at the south-western end of Shelburne County, and is about midway between the towns of Yarmouth and Shelburne, being 45 miles to the south-west of the latter. The settlement is a straggling one, and consists of Barrington Head and Barrington "Passage," the two covering a distance of about 3 miles. Considerable trade is done in supplying the fishermen of the neighbouring district, and the "Passage" being a place of call for the line of steamers running between Yarmouth and Halifax, a good deal of freight is transhipped for the immediate neighbourhood and Cape Sable Island.

At present there is but one wharf at which steamers can land, and this is not available at low water owing to a bar about 1,200 feet from the wharf, on which there is only 4 feet of water, at low tide and 13 feet at high water springs. As the dredging of a channel through the bar would be expensive, and as it was doubtful if the channel would remain open, on account of its being at right angles to the current and set of the tide round Cape Sable Island, an examination was made in 1888 of the different sites in the neighbourhood, to ascertain which was most suitable for the construction of a public wharf, and one was selected near the head of Sherrows Channel.

This channel enters the main channel immediately to the eastward of the bar, and lies between Sherrows Island and the mainland. The flats on either side are just bare at low water, at which time there is 12 feet of water in the channel itself. Spring tides at Barrington rise 9 feet. The site is on the western side of the channel, at a point where it most nearly approaches the mainland, and the situation is land-locked, and has long been used as a safe and convenient place to winter fishing vessels and coasters.

To reach the deep water of the channel it is necessary to cross 960 feet of flats, and it is proposed to carry the wharf across this on pile bents, the first 120 feet of the work being built of crib-work, on account of the rocky bottom. The wharf over the flats will be 20 feet wide, and the pile bents, of five piles each, placed at 15 feet centres. At the edge of the channel an "L" of crib wharfing, 30 feet wide and 60 feet long, is to be built for steamers and vessels to lie at.

During the fiscal year the sum of \$3,000 was expended towards the construction of this work; the inshore section was built partly of stone, owing to the high price of timber in the neighbourhood, the remainder being of crib-work, as was originally intended, and sufficient piles, square timber, planking, &c., was purchased to construct about 600 feet of the work. It is estimated that the structure, when completed, will cost \$6,800.

#### BATTY ISLAND.

Batty Island, Pictou County, is situated in Merigomish Harbour, near the entrance. Its length is  $1\frac{1}{2}$  miles and its greatest width half a mile, and its southern shore is distant from the mainland about three-quarters of a mile, and is sheltered from all outside winds.

During the year a small wharf was constructed on the south side of the Island. It extends 60 feet to flats covered with only a few inches at extreme low water, is 12 feet in width, and consists of two blocks, each 15 feet by 12 feet, with openings of 15 feet. Spring tides rise 5 feet 3 inches; neaps rise 3 feet 3 inches.

#### BAYFIELD.

Bayfield, Antigonish County, is on the south coast of St. George's Bay, 3 miles east from Antigonish Harbour, and 15 miles west from the entrance of the Strait of Canso. The harbour is formed by Pomquet Island and outlying reefs.

Bayfield wharf, on the western side of the harbour, a quarter of a mile south from the breakwater, was commenced by a joint stock company about thirty-two years ago, was handed over to the Government of Nova Scotia and completed about sixteen years ago, and came under the charge of the Federal Government in 1887. It is 402 feet in length, 22 feet wide over a distance of 134 feet from the end, 30 feet over a further distance of 193½ feet, and 50 feet over the remaining 24½ feet. The depth at the outer end at extreme low water is 9 feet. Spring tides rise 4 feet, neaps rise 2 feet.

In November, 1887, a contract was entered into for repairing, raising and close-piling the two outer blocks, cutting down the central and shore blocks, and for the construction of a new work between the outer blocks and the shore. The work was completed in November, 1888.

In 1879 a breakwater was built, extending 400 feet from Pomquet Point. A contract entered into in 1886 for the construction of an additional length of 300 feet was completed in October, 1888.

Dredging was done around the sides and end of the wharf to a depth of 12 feet at low water, and in opening a basin inside of the "L" or return at the end of the wharf, the whole for the greater and better accommodation of vessels and the shipment of produce, &c.

#### BAY ST. LAWRENCE.

Bay St. Lawrence, Victoria County, is at the northern extremity of Cape Breton Island, between Capes North and St. Lawrence.

Near the head of the bay there is a small lake enclosed by a beach of sand and gravel.

In 1887 a channel was opened through the beach to admit of the passage of boats at high water. Shortly after its completion it was filled in from the outside, over a distance of about 100 feet, and during 1888-89 the channel, which had been alternately opened during freshets and closed during northerly gales, was re-opened and protected by a pier extending 53 feet beyond high water and by a work of brush and stone, 30 feet in length, inside of it.

The channel remained open for a while after the completion of the protection work, but is now closed by a short bar opposite the inner end of the pier.

This shoaling is due to the travel of sand and gravel across the beach, inside the protection work, during northerly gales.

Spring tides rise 4 feet.

#### BEAVER RIVER.

Beaver River, Yarmouth County, flows into the Bay of Fundy, near the mouth of St. Mary's Bay, and forms the dividing line between Yarmouth and Digby.

The river discharges through a gravelly beach, which frequently, when the stream is low, obstructs the mouth, and of late years the river has been completely closed, the water finding an exit through the gravel.

In the year 1886-87 operations were begun by the Department to improve the river mouth and remedy this defect. A passage was cut through the gravel bank and sea wall, and a short breakwater was built on the southern side to catch the gravel and prevent the bank reforming.

This work proved very satisfactory, and during the last fiscal year an additional sum of \$1,500 was used for further improvements. These consist of extending the breakwater 100 feet, sheet-piling the northern face of the same, which was exposed to the action of the river and was in danger of being undermined, and extending the short pier on the northern side of the mouth, it being found that storms from the north made it difficult for fishing boats to enter and at times threw in considerable gravel.

The breakwater, beside protecting the river mouth, forms a good though short loading pier for small vessels during the summer months, and the pond inside the sea wall a convenient boat harbour for fishermen.

**BIG BRAS D'OR.**

Big Bras d'Or, Victoria County, is on the south side of the channel of the same name, near its entrance to the Atlantic Ocean.

During the year (1888-89) the unexpended balance of the amount appropriated for the year 1887-88 was expended in completing a wharf 160 feet in length and 20 feet in width, with an "L" 40 feet by 20 feet. It is strongly constructed of round timber in blocks, with openings of 17 feet 6 inches, and is well ballasted and protected at the outer end by close-piling. The depth at the outer end, at extreme low water, is 11 feet.

Spring tides rise 2 feet.

**BIG POND.**

Big Pond, Cape Breton County, is on the south side of the East Bay of the Great Bras d'Or Lake, 13 miles from the head of the bay.

During the year the unexpended balance of the amount appropriated for the previous year was expended in completing a wharf 260 feet in length and 20 feet wide, with a depth at the outer end of 8 feet at lowest water level.

**BLUE ROCK.**

Blue Rock, Antigonish County, is on the south coast of St. George's Bay, 2½ miles east from Tracadie Harbour.

A contract entered into in November, 1886, for the construction of a breakwater 326½ feet in length, to extend in a south-westerly direction from Blue Cape, was completed in October, 1888.

The breakwater is 16 feet wide on the top; on the seaward side it has a face sloping 1 to 1, from the top to 1 foot below extreme high water, the outer end and seaward side below the sloping face are built to a batter of 1 in 6. The inner side has a batter of 1 in 12. It is strongly constructed, with faces of squared timber, is full ballasted and is protected at the outer end and along the inner face for a length of 30 feet by close-fendering. The work is dry at extreme low water 60 feet from the shore end. The depth at the outer end at extreme low water is 12 feet, and over the area sheltered from the north and east from 12 to 5 feet.

Spring tides rise 4 feet.

**BROAD COVE.**

Broad Cove Marsh, Inverness County, is on the Gulf of St. Lawrence, 12 miles south from Margaree.

A contract entered into in November, 1886, for the construction of a wharf at this place, was completed in December, 1888.

The wharf is 400 feet in length and 25 feet in width on top. It is strongly constructed, with faces of squared timber, and is full ballasted and protected at the outer end by close-fendering. The depth at extreme low water at the outer end is 12 feet 10 inches.

Spring tides rise 4 feet 8 inches.

**BRULÉ.**

Brulé is situated on the south side of Brulé Harbour, Northumberland Strait, in the extreme north-east corner of Colchester County, nearly midway between River John and Tatamagouche, and distant about one mile from the railroad being built between Oxford and New Glasgow.

The construction of the wharf was begun about 25 years ago, and was completed to its present dimensions by private subscriptions and grants from the Local Governments of Nova Scotia and Prince Edward Island, at a total cost of \$2,500. It is 404 feet in length, with an average width of 24 feet, and is built entirely of round hemlock timber. For a distance of 300 feet from the inner end the top of the wharf is gravelled; the outer 104 feet are planked over. The work is 13 feet high at

the outer end, and the depth of water at the same place at low water springs is 3 feet, and as spring tides rise 7 feet the depth at high water springs increases to 10 feet. The beach dries out to about 100 feet from the end at low water.

The trade from the wharf consists principally of hemlock bark, lumber, hay and potatoes, and the vessels employed in the trade are small schooners, not over 300 tons burthen.

During 1886-87 an amount of \$500 was expended by the Department in levelling off the top and in ballasting.

During the last fiscal year a further sum of \$550 was expended in general repairs to the structure.

The work is not much exposed, and although weakened by age is at present in a fair state of repair.

#### CRANBERRY HEAD.

Cranberry Head, now Sanford, is 6 miles north of Yarmouth. It is quite an important fishing station, and the breakwater is used entirely for the protection of small vessels and fishing boats. Besides net and line fishing, two three, and sometimes as many as four large fishing traps are worked from this breakwater. These traps represent considerable capital and employ a number of men, most of whom own shares in the traps.

The breakwater was begun about the year 1858 by the local authorities, and different expenditures were made by them until the year 1865. In 1876 the first expenditure was made by the Department, and the sum of \$2,000 was used in extending the structure 150 feet. In 1878-79 a further sum of \$1,000 was expended in constructing an additional length of 50 feet and in repairing the older portions. During August, 1879, the work was damaged by storm, and \$500 was employed in making necessary repairs, and in 1883-84 the outer end and part of the seaward face was sheathed. In 1886-87 it was found that the gravel was working round the outer end of the pier and destroying the harbour, and a spur 28 feet long was built at right angles to the seaward face near its outer end to arrest it. In 1887-88 some small repairs were made to the sheathing, which had become worn through by the action of the gravel, and during the past fiscal year the sum of \$200 was expended in removing the gravel from the dock where it had collected previous to the spur being built.

The structure is comparatively short on the seaward side, owing to the large amount of gravel collected there, only 300 feet of it being exposed above the beach, while the inside or dock face is 470 feet long. The outer end of the pier for a length of 232 feet is 23 feet wide, the remainder, or inshore end, having a width of 19 feet. The wider portion of the work is fitted with a break 3 feet high and the seaward face is sheathed with flatted spars from 6 to 8 inches thick.

Spring tides rise at this place 16 feet, and the breakwater extends to within a short distance of low water mark, there being from 13 to 15 feet of water at its outer end according to the different stages or heights of the gravel.

#### CHETICAMP.

Cheticamp Harbour, Inverness County, is on the west coast of Cape Breton Island, 18 miles north from Margaree Harbour.

A contract was entered into 10th June, 1889, for the construction of a wharf on the eastern side of the harbour, to consist of an approach 125 feet in length and 30 feet in width over a distance of 60 feet from its outer end, with end and side walls of stone and centre filling of earth or stone; and an extension, 80 feet in length, in two blocks, with openings of 17 feet 6 inches. The outer block is to be 60 feet in length along the channel face, and is to have a depth of 4 feet at extreme low water.

Spring tides rise  $3\frac{1}{2}$  feet.

## COW BAY.

Cow Bay, Cape Breton County, is on the eastern coast of Cape Breton Island, about 18 miles south-east of Sydney Harbour. Owing to the extensive coal mines in its vicinity it is a place of considerable importance.

The bay is two and a half miles wide at its mouth, and being completely open to the Atlantic Ocean affords no safe anchorage during easterly winds.

A breakwater was built on the north side of the Bay by Messrs. Archibald & Co., proprietors of the Gowie mines, with some aid from the Government of Nova Scotia. It is 1,386 feet in length, and was originally about 44 feet in width, with a depth at outer end at low water of 20 feet. The area of the basin enclosed between it and the loading pier of the Gowie mines is about 17 acres, 10 acres of which had a depth of from 9 to 20 feet at low water. Spring tides rise 5 feet.

In 1873, while repairs were in progress by the Department, the breakwater was seriously damaged by the great gale of August 24th. After the gale operations were resumed, the balance of the amount appropriated being largely supplemented by Messrs. Archibald & Co.

In 1874 Messrs. Archibald & Co.'s interest in the breakwater was acquired by the Federal Government. A contract entered into in May, 1875, for repairing and strengthening the structure, was completed in July, 1877. Extensive repairs have been made nearly every year since 1877, and the work has been strengthened by the addition of counter forts and outer face works and by close-piling.

During the last fiscal year very extensive repairs were made to those parts of the breakwater which had been damaged by storms and weakened by decay, and owing to its exposed position the breakwater is always liable to be damaged by easterly gales.

## DELAPE'S COVE.

Delape's Cove, Annapolis County, is situated on the south shore of the Bay of Fundy, and is about 12 miles to the eastward of Digby Gut.

The breakwater is constructed immediately to the eastward of the mouth of a small pond which affords safe shelter for fishing boats and a convenient place for keeping small vessels during the stormy winter months. The breakwater itself affords a good loading place for coasters and small schooners, the pier breaking off all easterly storms, the formation of the coast on the opposite side of the stream forming a natural western breakwater.

This breakwater was built by the Department in 1878-79 at a cost of \$2,150. It is 156 feet long and 25 feet 3 inches wide, and is constructed of round timber, with square timber faces, its easterly side being sheathed with 8 inch timber. It is provided with a "break" 4 feet 6 inches high along its seaward (easterly) side, and its covering is of 6-inch material.

In 1885 the sum of \$50 was expended in repairing the foundation of the seaward face and depositing large stone along it, to prevent the gravel from washing away. The whole pier is in good order and is in need of no immediate repairs.

During the past year the sum of \$1,000 was expended in protecting the entrance to the pond and in placing an anchor and buoy off the outer end of the pier to enable vessels to warp out and proceed to sea, and avoid the danger of going ashore on the western headland to which they were formerly exposed.

The opening into the pond was protected by extending the western face of the pier inwards 100 feet, along the face of the stream, or to where this latter opens out into the pond, and in raising the beach on the seaward side of the pier and preventing the stone and gravel from being thrown over the sea wall. The wharfing along the stream is of an average height of about 16 feet and 12 feet wide, and the entrance to the pond is now clear and unobstructed.

The warping anchor is a large rock, placed in position and fitted with proper chains and shackles, and during the summer months has a spar buoy attached. This latter is removed in winter, to avoid danger of drifting ice.

## DIGBY.

The town of Digby is situated at the western end of Annapolis Basin, and is the eastern terminus of the Western Counties Railway. It is a port of call for steamers running between Annapolis, St. John and Boston, and does a considerable coasting trade, principally in the transshipment of fish. The harbour is open at all seasons, and the pier which stands at the northern end of the town acts as a break-water to the smaller wharves, and is the only wharf in the place accessible at low water. The outer end of the pier was destroyed by storm in December, 1885, and prior to this consisted of an inshore section of pile-work 560 feet long and 37 feet wide; then a block of close-faced timber; 80 x 40 feet; next a cribwork inclined landing, 170 feet long, over the top of which there was a deck wharfing carried on pile bents; lastly, a close-faced timber block 50 feet by 45 feet, which formed the outer end of the pier. A channel was also dredged along the southern side of the pier, from the head of the inclined landing past the outer block and into the deeper water beyond.

The storm referred to moved the outer block bodily into the dredged channel and destroyed the outer end of the pier, as far back as the head of the inclined landing.

After the destruction of the outer end of the pier the passing steamers effected a landing and loaded and discharged their freight by means of a scow and tug boat, and as the detached block was very much in the way an attempt was made in 1887, by the Department, to remove it by day's labor. This was not successful, and in 1888 a contract was entered into for its removal. The contractor after much difficulty tore the block to pieces and removed it down to the surface of the mud.

In January, 1888, operations were begun towards rebuilding the pier to its original length, and work was continued until the 1st November last, at an expenditure of \$8,863.01, of which sum \$2,470.62 has been expended since the beginning of the fiscal year.

The new work consists of a block 45 feet by 45 feet, to replace the former one. This block is built of round timber, with double sets of face logs, and is full ballasted; it is 45 feet high, and is connected with the older portions of the pier by a cribwork inclined landing, over the top of which a deck wharf is carried on heavy framed bents. The inclined landing and its superstructure is 25 feet wide. Besides the above, the inshore or pilework section was strengthened and repaired in places, and parts of the worn and decayed plank covering were renewed.

The inshore end of the pier is very old and decayed, and though now in serviceable condition, is liable to damage from storms, many of the piles being eaten off by worms, and the block at the head of the inclined landing much twisted from its original position by the storm of 1885.

Spring tides rise 27 feet 6 inches, and leave the beach bare to the head of the landing. There is now 12 feet of water at low tide at the end of the pier.

## EAST BAY.

East Bay, Cape Breton County, is an arm of the Great Bras d'Or Lake.

In 1881 a wharf was built at the head of the bay by the people, aided by a small grant from the Provincial Government. It was originally 160 feet in length, and in 1882-83 a block 70 feet by 18 feet was built at the outer end. In 1883-84 the inshore or original portion was placed in a thorough state of repair.

During the year 1888-89 the covering of the outer block was repaired, new fenders replaced and two of the shore or central blocks were rebuilt and other repairs executed. There is a depth at the outer end of 11 feet at lowest lake level.

One of the steamers of the Bras d'Or Steam Navigation Company make daily trips between East Bay and Port Mulgrave during the summer.

## EATONVILLE.

Eatonville Harbour, formerly known as "The Three Sisters," Cumberland County, is about 10 miles north of Cape Chignecto, Bay of Fundy, and 4 miles south-west from Apple River Harbour.

The harbour is formed by a sand beach at its mouth, which extends from the south side to within about 120 feet of the rocky cliff on the north side. Between the end of the beach and the cliff flows the stream, and the tide which runs inland about half a mile, covers, at high water, a large expanse of flats composed of marsh mud.

Large vessels up to 1,200 tons can run into the harbour at high water, where they load lumber for the English market, or where they undergo necessary repairs.

Spring tides rise 37 feet, neaps rise 30 feet.

During 1887-88 a breakwater was constructed by the Department at a cost of \$2,000 off the northern end of the sand beach, to prevent the accumulation of gravel in the mouth of the river and to protect the end of the beach, as during freshets the end of the latter was often damaged, and during the season when there are no freshets the mouth of the river was filling up with gravel thrown in by the sea, making it difficult for vessels to enter or leave the harbour. The work constructed was 123 feet in length and 20 feet wide on top, sloping 1 in 4 at the end and 1 in 8 on the sides, it was built of round timber cribwork, thoroughly put together and well ballasted. Its average height was 17 feet.

On the 11th August, 1880, instructions were given to extend the breakwater a further length of 80 feet. Work was commenced upon it at once, and after the bottom was placed and close-piled around, the work was visited by a very heavy gale, which cut away the gravel bank at the inner end of the breakwater and undermined it. Work was stopped on the extension, and all the energies were bent upon securing the inner end of the breakwater by the construction of protection works. The work was secured for the winter, and it has passed through very severe storms since without further damage. The beach dries out about 100 feet beyond the end of the unfinished work during low water springs.

#### GABARUS AND BELFRY LAKES.

Gabarus and Belfry Lakes, in Cape Breton County, a few miles south from Gabarus Bay, are connected by a stillwater channel. Belfry Lake is connected with Fourchu Bay by a narrow and intricate channel.

During the year 1888-89 the channel between the two lakes was deepened to 2 feet at the lowest lake level over a distance of about 800 feet. The new channel is 20 feet in width.

#### GREEN COVE.

Green Cove, now called Port Maitland, Yarmouth County, is about 13 miles north of the town of Yarmouth, and is a thriving fishing village, from which considerable trap fishing is done and a large number of shore boats kept.

In 1878 the "Pond Company" transferred a certain portion of their property to the Crown, and the Department expended the sum of \$4,500 in extending the eastern breakwater 50 feet, and in raising and widening the inner end for a length of 158 feet and also constructing a spur 75 feet long on the western breakwater. In 1885-86 the outer end of the eastern pier was raised and the sheathing of the outer face of the western breakwater repaired.

During the early part of the winter of 1887-88 the western breakwater was seriously damaged by a succession of storms, and a breach of 86 feet was made directly through the work near the outer end.

In the first part of the past fiscal year the sum of \$500 was expended in protecting the work from further damage. This sum was used in clearing away the wreckage, closing up both sides of the breach, and in driving a number of fender piles along the outer faces and exposed corners of the broken work.

The breakwater is entirely dry at low water springs, and there is about 16 feet of water at the outer end at high tide, spring tides rising about 17 feet 6 inches at this place. Including the gap through the work, the breakwater is 386 feet long, and is from 20 to 22 feet wide.

### GREEN HARBOUR.

Green Harbour, Shelburne County, is situated between the mouth of Jordan River and Ragged Island Harbour, and is about  $2\frac{1}{2}$  miles to the north-west of Lockport.

The harbour is only serviceable for small vessels, and being exposed to the southward a heavy sea at times comes in from the Atlantic, but on its eastern side there is a sheltered bay, in which some twenty fishermen keep their boats. This bay has a channel in its centre, in which there is from 4 to 6 feet of water at low tide; the rest of the bay is then dry, and consists of mud flats. On the western side of this bay, and protecting it from the open water of Green Harbour, there is a bar of gravel and stone.

During the fiscal year the sum of \$100 was expended in cutting a boat channel through the bar to enable the fishermen to reach their fishing grounds without the necessity of rowing their boats round the northern end. The channel was excavated by hand, and is available to boats from three-quarters flood to one-quarter ebb; it is 125 feet long, and sufficiently wide to enable the largest boats to pass through.

### HAMPTON.

Hampton, or Chute's Cove, Annapolis County, is 25 miles east of Digby Gut, and is 6 miles north of Bridgetown, its nearest railway station.

The original pier at this place was built by the Provincial Government, and was about half a mile to the westward of the present structure. It was 165 feet in length and in 1879 the Department expended \$3,000 in extending the work 121 feet, in strengthening the older parts and in preventing the work from being undermined by the action of the sea.

In 1881 it was found that the original work had been so badly located that it would be impossible to make it of any practicable service, as it was not only being undermined on the seaward side but, owing to the direction of the pier the shingle was fast shoaling the water on the inside. It was therefore decided to remove the structure to its present site.

This was done at a cost of \$2,300, and such of the materials of the old structure as were sound and fit for the purpose were used in the new work. The present pier is 264 feet long, and is situated immediately to the westward of the mouth of a small stream. This latter washes away the sand.

In examining this work last year it was found that the stream had worked under the foundation and endangered the whole structure. To guard against this, during the past year the Department expended the sum of \$675 in close-piling the entire inner face, levelling up the top of the work, which had settled in places, putting in some additional ballast and effecting some general repairs to the covering and "break." The pier is now in good condition, and affords at high water a good safe loading berth for small schooners and coasters.

The trade is the same as that of other piers along this coast of the Bay of Fundy, viz., principally cordwood, fish and the shipment of apples, potatoes and other products of the North Mountain.

The range of tides is from 27 to 31 feet, and there is about 20 feet of water at the end of the pier at ordinary high water spring tides.

### JONES' HARBOUR.

Jones' Harbour, Shelburne County, is a small harbour on the eastern side of the mouth of Sable River, and is distant 12 miles east of Lockport by water. The harbour is small, but being land locked and having 12 feet of water in its channel, it is much used by shore fishermen in the fall, when the larger vessels have returned from the "Banks."

Owing to its position on the coast, there is a heavy run of tide in the harbour, and the fishermen have had difficulty in properly securing their boats.



During the fiscal year the Department expended the sum of \$50 in placing moorings in the harbour. These consist of two ring bolts in exposed rocks, and a heavy stone anchor, with chain swivel and buoy attached.

#### KINGSPORT.

Kingsport, formerly Oak Point, King's County, is situated on the western shore of the Basin of Minas, between the mouth of the Cornwallis River and Cape Blomidon, and it is the eastern terminus of a branch of the Windsor and Annapolis Railway now under construction.

The original pier was 445 feet in length, and was owned and controlled by a pier company, which transferred it to the Crown in 1873-74. A crib-work facing, 12 feet wide, was built along the eastern or exposed side, for the purpose of breaking the force of the sea.

In March, 1875, a contract was made for the extension of the pier 270 feet, with a width of 30 feet, in order to increase the area sheltered and afford earlier access to the harbour which, owing to the great range of tides (from 40 to 43 feet), is dry between half ebb and half flood, and was completed in November 1875.

In 1883-84 some slight repairs were made to the older work, and in 1885-86 the covering which had become old and worn in places was renewed.

During 1887, 107 feet of the damaged face work of the breakwater was rebuilt.

In the autumn of 1888 it was found that the covering of the pile work section was so decayed that it was impossible for the farmers to reach the outer part of the pier with their loaded teams, and a plank driveway, 12 feet wide over the pile section, was begun in November and completed during the early part of the winter.

#### LITTLE NARROWS.

Little Narrows, Victoria County, is a contraction of the St. Patrick's channel of the Great Bras d'Or Lake, at a point 7 miles to the eastward of the village of Whycocomagh.

A wharf was constructed on the south side of the Narrows in 1887-88. It consists of a shore block, 47 feet 6 inches in length and 20 feet in width, and of a pile extension 82 feet in length, with an "L" at the outer end 40 feet by 20 feet. The depth at the outer end is 14 feet. The level of the Lake is constant.

During the year (1888-89) the unexpended balance of the amount appropriated for the year 1887-88 was expended in the construction of a store house and in repairs to the slip.

The wharf is used by one of the steamers of the Bras d'Or Steam Navigation Company plying between Little Bras d'Or, Baddeck and Whycocomagh, and as a place of shipment for cattle and farm produce.

#### LISMORE.

Lismore, in Pictou County, is on the Northumberland Strait, 10 miles east from Merigomish, the nearest harbour, and the same distance east from French River, the nearest station on the eastern extension of the Intercolonial Railway. The residents are farmers and engage in fishing.

A wharf was commenced in 1886-87 and completed the following year. It is 200 feet in length and 20 feet wide, strongly constructed of squared timber, close-faced, and is full ballasted and protected at the outer end by close-fendering. The depth at the outer end at extreme low water is 1 foot 9 inches. Spring tides rise 4 feet 6 inches.

During the last fiscal year a small amount of blasting was done on the ledge, to give a greater depth of water.

#### LOWER HORTON.

Lower Horton, or Horton Landing is situated in the eastern end of King's County, N.S., at the mouth of the Gasperaux River, about midway between Avonport and Wolfville. It is a station on the Windsor and Annapolis Railway.

During the fiscal year 1888-89 the sum of \$2,252.28 was expended in rebuilding the loading wharf at this place; the former wharf which was built some sixty years ago, having become so decayed and dilapidated that it was useless for shipping purposes.

The new wharf is built upon the site of the old one, and is constructed of round timber open cribwork, with three ballast floors, pile-fenders, plank covering, &c. The work is 172 feet long, 65 feet wide at the outer end and 23 feet 6 inches wide at the inner.

The site is a safe and sheltered one, being within the mouth of the river, and though the work is dry at low water, owing to the great range of tide, vessels drawing 18 feet can reach it at high water.

#### MABOU.

Mabou Harbour, Inverness County, is on the west coast of Cape Breton, 6 miles north-east from Port Hood. Its entrance was formerly at the southern extremity of a range of sand hills by an intricate channel, obstructed by a bar over which there was a depth of only 4 feet at low water.

In 1870 a survey was made, and a report submitted on the project of opening a new channel through the sand hills at their northern extremity, and closing the existing channel.

The work was commenced in 1872. A pier on the south side of the new channel, 753 feet in length, which was completed in 1876, and the same year the old channel was closed. Expenditures have been made nearly every year since 1876 in constructing a brush and stone dam on the south side near the outer end of the pier, constructing and repairing a breast-work on the north side, repairing the pier and protecting it by close-piling, and since 1885 in constructing a work of brush and stone in shoal water on the north side of the channel, extending 1,112 feet beyond the outer end of the pier.

The amount appropriated for the year 1888-89 was expended in increasing the height of the brush and stonework.

The new channel is straight and is in every way a great improvement on the former entrance, which is now closed by a sand bar from 900 to 1,000 feet in width. The depth at low water, in the new channel opposite the outer end of the brush and stonework, is 7 feet; beyond this there is a short bar covered with 6 feet at low water. In the channel from the outer end of brush and stone work to the outer end of the pier the depth varies from 8 to 12 feet, and opposite the pier, where it is about 100 feet wide, from 12 to 15 feet at low water. From the inner end of the pier there is a channel 4,000 feet in length, expanding into a fine basin  $2\frac{1}{2}$  miles long, and from one quarter to one-half a mile wide, inside the 10 foot line, and having a depth of from  $2\frac{1}{2}$  to 4 fathoms over a large part of its area.

#### MAIN À DIEU.

Main à Dieu, Cape Breton County, is a small harbour on the eastern coast of Cape Breton Island, 10 miles north-east from Louisburg. It is sheltered by Scatarie Island and by reefs in the bay between it and the mainland, and affords a safe anchorage for small coasting and fishing vessels, by whom it is much frequented, in from 10 to 13 feet at low water. Spring tides rise  $5\frac{1}{2}$  feet.

A breakwater, 250 feet in length, was built from a point on the eastern side of the harbour in 1881-82. It consists of a core of timber work, full ballasted and covered with stone, sloping on the seaward side and outer end 3 to 1 and on the inner side 2 to 1, over which there is a covering of heavy stone carefully placed.

During the year (1888-89) \$400 was expended in replacing some of the heavy stones of the inner slope, near the outer end of the breakwater, which had first been lifted out of place by ice and afterward carried away by the sea.

## MARGARETVILLE.

Margaretville, Annapolis County, is on the southern shore of the Bay of Fundy, about 42 miles east of Digby Gut.

During the storm of 27th December, 1885, the pier at this place was seriously damaged, and a breach of 150 feet was made completely through the work.

At the Session of 1885-86 the sum of \$8,500 was voted to repair the pier, and during the last half of the year 1886 the destroyed portion was rebuilt, at a cost of \$4,419.92. In the spring of 1887 the repairs were continued, and the seaward face of the old work, which was much decayed and worm-eaten, was cut down and rebuilt. These repairs were in progress until the close of the season of 1887, when it was found that the sum appropriated was not sufficient to finish the work undertaken.

During the past year the additional sum of \$300 was used to complete the work of the previous season. This consisted of finishing the sheathing of outer face, adding 40 feet of new cap timber and three additional knees to the "break," completing the ballasting and covering, and removing some remaining old ballast from the dock or loading berth.

The structure is now in good order, and requires no further repairs or expenditure. It is 470 feet long and from 35 to 39 feet wide, and extends to within a short distance of low water mark. The tides range from 28 to 32 feet, and there is a depth of 27 feet at the end of the pier at high water springs.

## MCNAIR'S COVE.

McNair's Cove, Antigonish County, is on the western shore of St. George's Bay, 5 miles south from Cape George.

In 1872-73 a breakwater was constructed, extending 400 feet from the northern point of the cove. Repairs were made from time to time, and in 1878 a block, 20 feet in length, was placed at the outer end. In 1879 the work was carried away by drift ice from the outer end to within 100 feet of the shore end down to from 6 to 3 feet below low water. During the summer of 1883, 70 feet of the shore end was rebuilt, and during the winter of 1884 the work was extended 94 feet. In April, 1884, the 94 feet extension was badly damaged by drift ice and subsequently carried away.

In 1887 a contract was entered into for the reconstruction of 160 feet of the breakwater, and the work was completed in December, 1888.

The new work is 34 feet wide on top and has a sloping face on the seaward side and outer end. It is strongly constructed, close-faced, full ballasted, and protected on the seaward side and outer end by close-piling.

The depth at extreme low water at the outer end of the new work is 11 feet, and at its inner end 5 feet. Spring tides rise 4 feet.

## NOEL.

Noel Bay, Hants County, is situated on the southern side of Cobequid Bay, about 13 miles to the westward of the village of Maitland. It is the largest indentation on the southern side of the bay, being about a mile and a-half wide at its mouth and extending back from the general coast line about the same distance. The whole of the bay, with the exception of some small creek channels, is bare at low water. Spring tides rise 50 feet, neaps 43 feet.

To accommodate the large and prosperous agricultural community of this neighborhood, during the last fiscal year the Department constructed, at an expense of \$3,000, a landing wharf on the west side of the bay. The wharf, including the approach, is 275 feet in length and 25 feet wide with an "L" at the outer end 35 feet long. The approach, which is 75 feet in length, is constructed of crib work, filled in with brush, stone and gravel, and the main structure is built on pile bents and covered with plank. A double row of close-piling was placed along the seaward face of the wharf, and a single row at the outer end and L face. At the end there are 16 feet of water at high water, ordinary tides, and 20 feet at spring tides.

**PARKER'S COVE.**

Parker's Cove, Annapolis County, is situated on the southern shore of the Bay of Fundy, about 15 miles to the eastward of Digby Gut, and is directly north of Annapolis, its nearest railway station, and distant therefrom 7 miles.

During the year 1883-84 a small breakwater, 165 feet in length and 26 feet wide, was built near the eastern end of the cove for the accommodation of small boats and fishermen. The breakwater extends outwards at right angles to the head of the cove 100 feet, and its outer end has a slight angle to the westward.

Spring tides rise at this place about 30 feet, but as there is only 8 feet of water at the end of this pier at high water it is of little use for shipping purposes, and is therefore only used by fishermen.

During the past year the sum of \$200 was expended in general repairs to the structure. These consist of ten new fenders for the inner face, renewing 80 feet of cap timber, raising the surface of the outer end 2 feet and protecting the foundation from further settlement. The work is now in good order.

**PARRSBORO' BREAKWATER.**

Parrsboro' Breakwater is situated on the crown of the beach, which extends out from the western side of the mouth of Partridge Island River, and forms the harbour of Parrsboro', Cumberland County.

The beach is about a-third of a mile in length, and the lighthouse is situated near the eastern end. Being only a few feet above high water mark, the sea would break over it during southerly storms, and danger existing of a breach being made through the beach, and so destroying the harbour inside, the Marine and Fisheries Department constructed a breakwater for the protection of the beach.

The breakwater, or rather the beach protection, is 1,130 feet in length, with two spurs at its eastern end 50 feet in length each, built stepping off. The work is 10 feet wide and from 4 to 6 feet in height, built of squared timber laid close, partly filled with gravel to the top, and partly ballasted with gravel and planked over.

The western end of the work, for a distance of 200 feet, having been undermined, the Department, during last season, expended the sum of \$370 upon it. With that amount the damaged portion was strengthened and secured, and the work was extended a length of 30 feet inshore, to prevent scour around it during southerly gales.

**PARTRIDGE ISLAND PIER.**

Partridge Island Pier is situated on the north side of the Basin of Minas, about a mile to the westward of the mouth of the Partridge Island River, and about 2 miles distant from the town of Parrsboro', the terminus of the Cumberland Railway and Coal Co.'s railway.

The pier being directly on the sea shore, it has the benefit of the full extent of the tides, and as vessels can approach it and leave it at half tide, it is the principal point of communication between Cumberland County and the Counties of King's and Hants, on the south shore of the basin; and the steamers of the Basin of Minas, and the St. John and Basin of Minas routes, call there regularly during the season.

The pier is about 500 feet in length, and its width on the top varies from 27 to 29 feet. The inner end, for a distance of 42 feet slopes 6 feet, thence to the outer end it keeps its level, which is 4 feet below high water springs. On the inside it has a narrow inclined landing to afford passengers and freight a chance to land at all times of the tide. It is built of squared timber, with perpendicular faces, and is floored over. At the outer end it is 30 feet high, and the beach dries out, at low water, about 100 feet from the end of the pier.

This pier was built during 1864-65 by the Local Government of Nova Scotia, and since Confederation it has received heavy repairs from the Department. It is exposed to south-easterly gales, and when the ice is running up and down the bay with the wind and tide, and the top being low, and the outer portion submerged during high water springs, it is in constant danger of being damaged.

During last year a small amount was expended upon it, in renewing and re-fastening some planks in the covering which had become loosened.

#### PARTRIDGE ISLAND RIVER.

This river enters the north side of the Basin of Minas, the south-eastern arm of the Bay of Fundy, at the Village of Parrsboro', Cumberland County, the terminus of the Cumberland Railway and Coal Company's railway (formerly the Springhill and Parrsboro' Railway). The river from the village to its mouth forms the harbour, and it is a very important shipping point for coal and for lumber.

The channel of the river is very crooked, and in the spring of 1879 the work of cutting off Robertson's, Shannon's and Mullin's Points was commenced by the Department, and continued from year to year until 1884, when the contemplated work was brought to completion.

The spit making out from the end of the sand bar on the eastern side and near the mouth of the river, and consisting of clay and gravel, has always been a serious obstruction to navigation, necessitating a very sharp turn at this point, and particularly when large steamers and vessels come to and leave the new landing pier of the company, coal laden.

The river runs dry at low water, excepting a small fresh water channel, but at high water springs there is a depth of 25 feet at the loading pier.

During the last fiscal year the sum of \$3,000 was expended by the Department in cutting away the point of the spit, the quantity of material removed being nearly 6000 cubic yards of tough clay mixed with gravel.

#### PICTOU ISLAND.

Pictou Island, Pictou County, in the Strait of Northumberland, is 5 miles long by  $1\frac{1}{2}$  wide and about 10 miles north-east of Pictou light, the residents being engaged in fishing and agriculture.

There are two small wharves on the south side of the Island—one near the west end, built by the Provincial Government, and repaired and strengthened by the Department in 1880; and one near the centre of the Island, known as the "East Wharf," built by the Department in 1882-83.

During the year the balance of the amount appropriated for 1887-88 was expended in completing extensions of the east and west wharves. The east wharf has been extended 100 feet and the west wharf 92 feet 6 inches. The extensions are 20 feet wide on top, of round timber, ballasted and protected at the outer end by close-fendering.

The depth at extreme low water at the outer end of the east wharf is 3 feet to shifting sand, and 4 feet to hard bottom; that at the outer end of the west wharf is 3 feet. Spring tides rise 4 feet 6 inches.

#### PORT GREVILLE.

Port Greville, Cumberland County, is situated in Greville Bay, on the northern side of the Minas Channel, Bay of Fundy, and at the mouth of the Ratchford River. It is about 15 miles west of the town of Parrsboro', the terminus of the C. R. & C. Company's Railway, and 15 miles east of Cape d'Or.

The harbour is formed by a high gravel bar, which lies parallel to the shore, between which the river runs for half a mile before reaching low water mark. The bar although high, was, previous to 1872, covered during high water springs; but during that year a gale occurring at that stage of the tide the sea swept off the crown of the bar for a length of 2,800 feet, and to a depth of about  $2\frac{1}{2}$  feet. The protection thus afforded by the bar was in a great measure destroyed, and to restore its usefulness and improve it a wall of round timber cribwork, 2,200 feet in length and averaging 7 feet in depth, was constructed by the Department in 1874.

During 1886-87 a breakwater was constructed off the eastern end of the crib-work wall, for the double purpose of arresting the gravel which was being swept into the harbor by westerly gales, and deviating the course of the river, so as to

shorten its passage to the sea. It is 250 feet in length and 21 feet wide on the top, with sides sloping  $\frac{1}{2}$  to 1 on the seaward face. The work averaged a depth of 20 feet; it is built of round timber cribwork, the seaward face being sheathed with 6-inch plank, and the inner face and end being close-piled to a depth of 3 feet below the line of assumed clay bottom, to prevent scouring of the foundation. Low water mark extends out about 250 feet from the end of the breakwater. Spring tides rise 40 feet, neaps 33 feet.

#### PORT HOOD.

Port Hood the shire town of the County of Inverness, is on the west coast of Cape Breton, 20 miles north of the northern entrance of the Strait of Canso.

A pier 550 feet long and 24 feet wide with an L 100 feet by 25 feet, was built on the eastern shore of the harbour in 1885-86 by the Provincial Government. When first taken in charge by the Department it was in want of repairs. In November, 1871, a portion 200 feet in length was destroyed; during the two following seasons this was re-built, other necessary repairs made, and a new block, 125 feet by 25 feet, built at the outer end. Slight repairs were made in 1877-78 and 1879, and extensive repairs in 1879-82 to make good damages caused by gales in October, 1879, in August 1880 and again in November, 1881. Repairs of a permanent character were made in 1883-84, including the placing a protection work of large stones on both sides of the pier, sloping from high water on the north side 3 to 1, and on the south side 2 to 1. In 1884-85 some of the large stones of the protection work which had been disturbed were replaced. A small amount was expended in repairs to the outer end in 1887-88. While these were in progress the south end of the L was damaged below low water, and subsequently 40 feet of it was carried away.

The amount appropriated (1888-89) was expended in the construction of a new block 48 feet by 22 feet at the south end of the "L," in connecting it with the new block, and in other repairs.

The depth at extreme low water at the south or end face of the "L" is about 9 feet. Spring tides rise 4 feet.

The following is a statement of the number of trips made by steamers calling at Port Hood, their tonnage, &c., during the year ended 30th June:—

S.S. "Beaver," 99 tons, from Pictou .....	58 trips
S.S. "Rimouski," 84 tons, from Mulgrave.....	52 "
S.S. "M. A. Stair," 166 tons, from Halifax.....	2 "

#### PORT LORNE.

Port Lorne, formerly Port Williams or Marshall's Cove, is on the Bay of Fundy shore of Annapolis County, 30 miles east of Digby Gut, and it is 8 miles north of Bridgetown, its nearest railway station.

The pier at this place was begun in 1835, and was built at the joint expense of the inhabitants and the Local Government, and it is said that up to the year 1867 \$16,000 was expended upon it. Like all other similar piers on this coast of Nova Scotia, its trade has been greatly injured by the construction of the Windsor and Annapolis Railway, which has diverted much of it into other channels, but there is still quite a business done at the pier by small schooners and coasting vessels in carrying potatoes, apples, fish and cordwood to the St. John and Boston markets.

The first expenditure made at this place by the Department was in 1873-74, when the sum of \$3,500 was used in extending the work 67 feet. In 1879 some necessary repairs were made, at a cost of \$745.76, and in 1882-83 a contract was entered into for a further extension of the pier to give additional shelter to vessels.

This latter work was finished during the following year, and is 100 feet long and 36 feet wide: it is close-faced with square timber on both inside and outside, and is provided with a break 4 feet high.

During the past fiscal year the sum of \$200 was expended in effecting general repairs to the whole work. These repairs consist of some additional ballast, new

floor stringers and covering in the centre portion of the pier, five new fenders, one mooring post and strengthening the break in two places.

The outer end of the structure is still about 100 feet from low water, but owing to the range of tides, from 32 feet to 28 feet, there is 25 feet of water at the end of the pier at high water springs. The structure is 410 feet long and 36 feet wide.

#### ROSEWAY BEACH.

Roseway Beach, Shelburne County, is situated at the eastern end of Round Bay, and is about 10 miles due south of Shelburne town.

The beach extends from the shore outwards towards Grey's Island, and forms a natural breakwater to a small harbour behind it from which considerable fishing is done in shore boats.

The beach or bar is composed of fine white sand, which, when dry, drifts badly, and the top of the bar has gradually been getting lower and lower, until this present year, when some extra high tides came over into the harbour. The material composing the bar is so light that the tide in a short time would cut it away and destroy the harbour, and as it would be very difficult to stop an opening once made, it was important that the beach should be protected at once.

The sum of \$100 was appropriated for this work, and the beach was protected in the same manner as that of Round Bay, immediately to the westward, viz.,—brush and small trees were fastened together and laid along the highest part of the beach. These collected the drifting sand and built up the beach to its former level.

The small expenditure has proven of great benefit to the fishermen, and has saved from destruction a small but convenient boat harbour.

#### ROUND BAY.

Round Bay, Shelburne County, is on the Atlantic coast of Nova Scotia, about 3 miles east of Negro Harbour, and 13 miles to the southward of Shelburne.

The shores and beaches of Round Bay are composed of fine white sand which during the summer months, is liable to become very dry and drift badly with the winds off the Atlantic. The drifting takes place mostly near high water mark where the sand is driest, and as the beaches wear away the tide flows further and further inland, destroying the sea-walls and washing away the highway which follows the line of shore round the head of the bay.

The beaches have for years been protected and the sea walls built up by placing brush and trees, with their branches left on, a short distance above high water mark. This brush, &c., in a short time collects the sand, and is buried up in it, forming an efficient sea wall at a small cost. After the lapse of some years the whole brush, and especially the finer portions of it, dry, rot and break away, so that it will no longer retain the sand.

The beach, besides forming the highway, is also a natural protection to a pond inside the sea wall, in which the fishermen keep their boats; there is an opening into this pond near the western end of the beach, known as Sand Creek.

During the first half of the present fiscal year the sum of \$100 was expended by the Department in repairing the gaps in the seawall, and also in protecting in a more substantial manner the mouth of Sand Creek. The sum appropriated was not sufficient to complete these repairs, it being found that heavier material than brush was required at the creek mouth, owing to the action of the tide against it, and a further sum of \$80 was used to complete the work. The beach and entrance to the pond is in better condition now than it has been for years, and is not likely to require further repairs for some years to come.

The range of tides is from  $5\frac{1}{2}$  to 7 feet, and the beaches being very flat, they dry for a long distance out.

#### SHEET HARBOUR.

Sheet Harbor is situated on the Atlantic coast of Nova Scotia, in the eastern part of Halifax County, and is distant about 60 miles to the eastward of the mouth of Halifax Harbour.

The harbour is one of the finest in Nova Scotia, being of considerable extent and having an abundant depth of water. It runs inland some  $6\frac{1}{2}$  miles to a point where it divides into the arms, called respectively the West and East Rivers.

There are saw and pulp mills at the head of each arm, at which a large amount of lumber is cut and a considerable amount of pulp made. The lumber is exported in large vessels, principally barques, to the United Kingdom, and the pulp is shipped in schooners to the United States. Vessels coming to Sheet Harbour generally arrive in ballast and as all the available ballast grounds have been filled in, and the further depositing of it would injure the deep water channels, during the year 1887-88 a ballast wharf was constructed by the Department at the head of the West River. It is detached from the mainland, and is 60 feet in length and 15 feet wide. The front face of the wharf and "L" have a batter of 1 in 12: the western end, the inner side and the end of the "L" are plumb, and the inner end of the wharf slopes  $\frac{1}{2}$  to 1.

The work throughout is built of round timber, and the front face is sheathed with 3 inch plank. The top is 3 feet above high water springs, and along the front there is a depth of water at low water springs of 14 feet. Spring tides rise 6 feet 6 inches.

On the 9th January, ult., a contract was entered into for the construction of a ballast wharf on the north side of the East River, starting from the end of the remains of Ball's Wharf, running westerly a distance of 180 feet, and 20 feet wide, with an "L" 20 feet long and 20 feet wide at the western end, the work being built of round timber and the top, which is 3 feet above high water springs, will be covered with 3 inch plank. At 10 feet from the front of the wharf there are from 14 to 16 feet of water at low water springs. At the end of the fiscal year this ballast wharf was nearly completed.

#### SPENCER'S ISLAND.

The settlement of Spencer's Island is situated at the western end of Greville Bay, on the north side of the Minas Channel, Bay of Fundy, about 3 miles to the eastward of Cape d'Or and 30 miles distant by road from Parrsboro', Cumberland County, the terminus of the C. R. & C. Co.'s Railway, and steamers of the St. John and Basin of Minas route call there weekly on their way from Parrsboro' to St. John, and *vice versa*.

It derives its name from a small island lying opposite, and distant about half a mile from the mainland. To the northward of the island there is good anchorage, and safe from all winds, excepting those from east to south.

To afford shipping facilities, as well as for the shelter of small vessels and boats, during 1887-88 a landing wharf was constructed by the Department at a cost of \$5,000. It is 307 feet in length and 20 feet wide on top, and consists of an approach 15 feet long, pile-work 150 feet, and of a round timber block at the end 142 feet in length. The pile-work consists of pile bents, 15 feet apart, each having five piles. The block slopes 1 in 3 on the seaward face and 1 in 12 on the inside face, and is thoroughly put together and well ballasted. The pile work, as well as the block, are covered with 3-inch plank, and the top is 5 feet above assumed high water springs. At the end of the block there is a depth of 27 feet at high water springs, and the beach at low water dries out about 600 feet from the end. Spring tides rise 39 feet, neaps 33 feet.

During last season an amount of \$150 was expended in close piling and placing brush and stone around the north-east corner of the end, to prevent scour.

#### TATAMAGOUCHE.

The village of Tatamagouche, Colchester County, is situated on the western side of the Tatamagouche River, about  $1\frac{1}{2}$  miles from its entrance into Tatamagouche Bay, on the south side of the Strait of Northumberland. It is distant 16 miles from Wentworth station on the I. C. R., and it is a station on the Short Line Railway now under construction between Oxford and New Glasgow.



The Tatamagouche River, between its banks at high water, is here from 1,000 to 1,500 feet in width, but the navigable channel is only from 150 to 200 feet wide. Owing to the existence of shoals in the channel, which prevented vessels leaving or entering during low water, the Department deepened and straightened the same by dredging, and a depth of 7 feet can be obtained from the wharves at Tatamagouche out to sea. Spring tides rise 7 feet, neaps 5½ feet.

To accommodate the inhabitants living on the eastern side of the river, who were obliged to haul their produce for shipment to the wharves at Tatamagouche, a distance of 3 miles, and haul the coal which they use from the wharves to their homes, the Department finished during the last fiscal year, at a cost of \$600, a public wharf on the east side of the river and nearly opposite the mouth of the French River, which flows into the Tatamagouche half a mile below the village. The wharf is 96 feet in length, and consists of a short shore abutment and three round timber blocks, with intervening spaces. The wharf, excepting the outer block, which is 30 feet wide, is 20 feet in width and is covered with plank. There is a depth of 7 feet at low water 7 feet from the end of the outer block, and the mud flats dry out to within 10 feet of the outer end.

#### TROUT COVE.

Trout Cove is situated on the Bay of Fundy coast of Digby Neck, nearly midway between Digby Gut and Petit Passage.

In 1858, the inhabitants, assisted by a grant from the Local Government, built a breakwater 200 feet long and 30 feet wide. In 1876 a block 175 feet long and 30 feet wide was added by the Department, and in 1880, and again in 1881, extensive repairs were made to the old breakwater, 100 feet of which was completely destroyed by a storm in 1879, the total expenditure by the Department up to 1882 amounting to \$5,499.76. In 1882-83 it was found necessary to make further repairs, and in 1885-86, 100 feet of new facing was built into the old work, the "break" was raised and strengthened, and the outer end of the breakwater ballasted. Again, in 1887-88, it was found necessary to repair this face by constructing 140 feet of new work, and adding to the width of the "break;" some general repairs were also done at this time and new covering put down.

During the past fiscal year the sum of \$399.79 was used to repair the beach and the inner end of the work, the beach having washed away and exposed the foundation.

The present structure is 436 feet long and 30 feet wide. It is dry at low water, and at high tide there is a depth of 21 feet 6 inches at the outer end. Being the only breakwater between Digby Gut and Petit Passage, a distance of over 30 miles, considerable coasting business is done at it, and it is also important as a refuge for shore fishermen and a place to keep their boats and vessels.

#### WALLACE.

Wallace Harbour, Cumberland County, is situated at the mouth of the Wallace River, which empties into the south side of the Northumberland Straits, about midway between Pictou Harbour and Bay Verte, being about 45 miles to the northward of the former, and 40 miles to the southward of the latter, and is well protected from all winds, excepting those from the eastward.

The width of the river opposite Wallace is about 3,000 feet, but the navigable channel is only about 500 feet wide, the remainder of the width being composed of mud flats, which dry at low water springs. Spring tides rise 7 feet, neaps 5 feet.

Opposite the town of Wallace, which is situated on the south side of the river, a wharf was constructed many years ago, but as the communication thereto was only available at or near high water, the Department, in 1879, opened a channel, 45 feet wide and about 1,600 feet in length, with a depth of 8 feet at low water, from the main channel to the wharf.

This channel is almost at right angles to the shore line, and at high water the tide and sea sweep across it, and considerable silting up took place, particularly at

the inner end of the cut, and in 1887 it was cleaned out. The channel at present is from 40 to 45 feet wide, with a depth of water in it from 6 to  $7\frac{1}{2}$  feet at low water springs.

Towards preventing the inner end of the cut from silting up, and to afford at the same time increased shipping facilities, the wharf was extended during the last fiscal year, at a cost of \$1,000. It commenced at the end of the public road, and is 165 feet in length, 20 feet wide, and composed of a series of round timber blocks and spans, covered with 3-inch plank. The work dries at low water springs, but at 5 feet from the inner face at the outer end there is a depth of 6 feet in the cut.

#### WESTERN HEAD.

Western Head, Queen's County, is situated on the southern side of the entrance to Liverpool Bay, and is distant about 4 miles to the south of Liverpool. It is a bold, rocky point, exposed to the whole sweep of the Atlantic, behind which there is a partial shelter that enabled fishermen to land in moderate weather and draw their boats up on the beach.

A large number of boats are kept here, and as it is often impossible for the fishermen to make a landing if they should happen to be caught by a sudden storm on their fishing grounds, and as there is no other convenient shelter to run for, it was considered advisable to construct a breakwater for their protection.

The work was begun in 1887, and during the fiscal year 1887-88 the sum of \$5,000 was expended towards the construction of a stone breakwater immediately behind and partly in shelter of the "Head."

During the present fiscal year the further sum of \$2,000 was used to complete the work. Late in the fall of 1888 and soon after the breakwater was completed this coast was visited by an unusually heavy gale, which lasted three days and destroyed the outer end of the structure and scattered the heavy stone of which it was composed over and in front of the boat landing.

The breakwater was constructed of large, flat-bedded rock, quarried on the shore side of the "Head," and picked up on the neighbouring beaches. The bottom courses were firmly bolted to the ledge wherever it showed above high water, and the facing stone of the other courses bolted each to each, and to the next course below, with inch iron. The breakwater was 40 feet wide on top and 190 feet long, and the site selected was immediately behind the highest part of the solid ledge projecting out from the "Head," so that as little as possible of the outer face of the work should be exposed to the sea.

#### WHITE POINT.

White Point, Victoria County, is on the Atlantic coast of Cape Breton Island, at the southern extremity of Aspy Bay. The coast south along the Atlantic to Neil Harbour distant 7 miles and west  $3\frac{1}{2}$  miles to the head of Aspy Bay, is rugged and destitute of harbours or of good landing places for boats.

The amount appropriated (1888-89) was expended in excavating a dock or landing place for boats 100 feet in length, and extending 60 feet in from original high water mark. The bottom rises 1 in 5, and is at the back 12 feet above high water. The excavation was in loose rock, with clay overlying, and against a rock wall 8 feet in height. A fine beach 150 feet in length was formed between high and low water, and affords a convenient and safe landing place.

#### YARMOUTH.

Yarmouth harbour and town are situated at the south-western end of the Province of Nova Scotia. The town is of considerable extent, and annually exports large quantities of fish. It possesses several manufactories and a "marine railway," and a small dry dock, where vessels not exceeding 800 tons burden can be repaired.

During the year the channel in the harbour and leading to the wharves was both straightened and deepened, and a change made in the position of the "beacons," which were moved into the line of the improved channel.

## NEW BRUNSWICK.

### ANDERSON'S HOLLOW.

Anderson's Hollow, Albert County, is situated on the northern shore of Chignecto Channel, or north-eastern arm of the Bay of Fundy, and on the eastern side of Salisbury Bay, which lies between Cape Enragé and Matthew's Head.

The formation of a harbour at the place was first commenced by the Department in 1879-80, when an isolated block, 100 feet in length and 25 feet in width on top, was constructed at a distance of 550 feet from the shore and some 300 feet from extreme low water mark. Spring tides rise 40 feet and neap tides 34 feet.

Additions to this were made in 1883-84, and 1885-86 of 90 and 100 feet respectively.

During the fall of 1887 a contract was entered into for the construction of the remaining length (260 feet), to form a connection with the shore, and this was satisfactorily completed in August, 1888.

Repairs, consisting of re-fastening and replacing fenders and inserting blocks for strengthening the inner face of the outer 100 feet, or original block, were made, while several rocky ledges dangerous to vessels approaching or leaving the Breakwater were removed.

### BELLIVEAU.

Belliveau, Westmorland County, is situated on the eastern side of the Petitcodiac River, opposite Hillsboro', Albert County, and distant about 16 miles south from Moncton, or 8 miles north from Dorchester, both important stations on the Inter-colonial Railway.

Belliveau and vicinity are thriving and prosperous settlements, the inhabitants being now principally engaged in agricultural pursuits, the destruction, in 1869, of a wharf at the place, having seriously interfered with the shad fisheries, and preventing the shipment of the surplus produce raised in the district, or the cheap import of supplies required. To remedy this, in March, 1888, a contract was entered into for the construction of a wharf 200 feet long and 24 feet in width (measured on top), after which it was arranged with the contractor to extend the work 33 feet, all of which was satisfactorily completed on the 9th November, 1888.

Spring tides rise 45 feet, neaps 38 feet. The end of the work is about 200 feet from line of low water, and there is a depth at ordinary tides of 14 feet of water, or 18 feet at high water spring tides.

### CAMPBELLTON.

Campbellton, Restigouche County, is situated on the southern side of the Restigouche River, about 15 miles above Dalhousie, where the river enters the Baie des Chaleurs, and is an important station of the I. C. Railway, being the first shipping point reached after that line leaves the St. Lawrence.

It is practically the head of navigation, although the tide flows up the river some 9 miles further, but the water being shoal, prevents the passage of vessels of any size.

Except on the "Traverse" (which is being improved by dredging), the depth of 18 feet at low water springs can be carried to Campbellton, which, with the rise of 10½ feet at springs, and 7 feet at neap tides, affords a good depth of water for the class of vessels engaged, most of those, however, arrive in ballast, the disposal of which has been a matter of serious inconvenience.

To provide a place of deposit for ballast, a contract was entered into 23rd April, 1889, for the construction of a "ballast wharf," the proposed structure being an isolated block 140 feet in length by 35 feet in width, and having at it a depth of 18 feet at extreme low water, spring tides.

At the close of the fiscal year this work was fairly in progress, the bottom courses being commenced and much of the material delivered in the vicinity of the site.

## CAPE TORMENTINE.

Cape Tormentine is on the New Brunswick coast of the Strait of Northumberland, and opposite Cape Traverse, Prince Edward Island.

As stated in my report of last year, fresh tenders had been called for the completion of the wharf at this place, and in April, 1888, a contract was entered into with Mr. E. Murphy, of Toronto, for the same.

Active operations were not commenced by the contractor until August of that year, between which time and the close of the last fiscal year 729 feet of the stone approach have been built.

The work will be 2,500 feet in length, with an **L** at the outer end, consisting of two branches, each 400 feet in length. Of this length of 2,500 feet, the inner or shore end, for a distance of 1,300 feet, will be built wholly of stone, the remainder and the **L** of close-faced crib work, completely filled with rock ballast.

## EDGETTS' LANDING.

Edgetts' Landing, Albert County, is situated on the west side of the Petitcodiac River, about two miles south of the railway station and village of Hillsboro'.

Many years ago, and before the construction of the Albert County Railway, when the only means of communication with this locality was by water, the Government of New Brunswick constructed what was known as the steamboat wharf, but this, during the "Saxby Gale" in the fall of 1869 was destroyed, the bottom of the structure only remaining.

To facilitate the discharge of vessels calling at the port in ballast, a contract was entered into 15th January, 1889, for the construction of a ballast wharf.

This wharf is to be 400 feet in length, reaching to within 150 feet of low water mark, and will have at its outer end 30 feet of water at high water springs, which here rise 45 feet and neap tides 38 feet, the width at the outer end being 40 feet reduced at each 100 feet inward 10 feet.

Work was commenced by the contractors in the beginning of June, 1889, and abandoned by them at the end of the month, when, having provided the greater portion of the materials required, they found themselves unable to proceed further.

## FORT DUFFERIN.

Fort Dufferin is situated on Negro Point, at the western entrance to St. John Harbour, and at the inner end of the breakwater. The point is 60 feet in height, and is composed of clay and stone and the action of the sea at its base, during south-easterly gales, causes undermining, and several slides of the bank have taken place, which in some instances were so severe as to endanger the fort and threaten its stability.

In June, 1882, a face wall, 430 feet in length, 7 feet wide on top, the outer face battering  $\frac{1}{2}$  to 1, was built on the beach at the foot of the glacis, and extending eastwardly from the inner end of the breakwater was continued; the glacis was re-sloped and works necessary for the proper drainage of the fort enclosure were done.

During the winter of 1882-83 a further land slide took place to the eastward of and immediately adjoining the fort property, and injured to some extent the slope formed in 1882, as well as the eastern corner of the face wall, which had been undermined by the sea. To prevent further damage to the base of the slope a further length of 303 feet of face wall was built, extending eastwardly from the work of 1882.

During the winter of 1886-87 the work, particularly the old portion, was much disturbed by the sea, caused by a succession of easterly gales, and a portion of the old wall, 205 feet in length was entirely destroyed and washed away.

In the spring of 1887 the sum of \$600 was expended in close-piling around a portion of the bank, back of the beach, to prevent further undermining.

In November, 1887, the re-construction of that portion of the work destroyed, the re-ballasting of all work, the re-sheating of damaged face-walls and the placing of

a timber break along the whole of the outer face, was proceeded with, and completed in a satisfactory manner on the 31st August, 1888.

#### GRAND ANSE.

Grand Anse, Gloucester County, is a small cove on the southern shore of the Baie des Chaleurs, about midway between the harbors of Bathurst and Shippegan. There is quite a thriving settlement at the place, which is also a railway and telegraph station on the line of the "Caraquet Railway," by which it is distant 30 miles from Bathurst and 40 miles from Shippegan. At Gloucester Junction, 3 miles south of Bathurst, connection is made with the Intercolonial system.

The place being near excellent fishing grounds, and this industry largely followed as a means of livelihood (some 90 boats being owned in the district), to afford protection for them, the construction of a breakwater was commenced by the Department in 1875, and carried to completion in 1879. Being exposed to the force of the sea, and the action of the ice in winter during northerly storms, almost yearly expenditures were necessary for repairs, the most serious damage occurring in the spring of 1886, when the entire top and down to 2 feet above low water was carried away by the pressure of the ice during a northerly storm and high tide, and deposited in a part of what had formerly been the boat harbour or sheltered area.

With the appropriation of 1886-87, 100 feet in length (or nearly one half) was re-constructed, its width being increased 10 feet and its seaward or exposed face formed with a slope above low water of 1 to 1, which is hoped may prevent serious injury from ice pressure. A further 60 feet of the original length was reconstructed with the appropriation of 1887-88, and with that of 1888-89 was entirely completed, as well as an addition of 10 feet made at the eastern end. Much also of the ballast and wreckage deposited in the sheltered area was removed.

#### HOPEWELL CAPE.

Hopewell Cape, Albert County, is situated on the western side of the Petitcodiac River, 7 miles below the town of Hillsboro' and opposite Dorchester, Westmorland County, from which it is distant 4 miles by ferry and road.

Hopewell Cape is the shiretown of the county, and the centre of a thriving settlement where in former years ship-building was extensively carried on. Off the "Cape" vessels bound to Moncton, Hillsboro, Dorchester, &c., usually anchor, the depth of water in the channel being 3 to 7 fathoms at low water, while further up the river it decreases to about 1 fathom.

It had been the practice of captains of vessels while at anchor here to throw over what ballast they had to dispose of, and this, in course of time, began to severely injure the safety of the anchorage. To remedy this the Department, in 1883, commenced the construction of a ballast wharf, a contract for a length of 380 feet being entered into 18th September, of that year, and the work was completed in August following, a further extension of the wharf 200 feet being contracted for on 5th March, 1885, and finished 27th August of the same year.

To improve as much as possible the depth of water on the length of wharf built, in the fall of 1886 a small stream passing near the northern side of the wharf was diverted, so as to pass alongside its outer 200 feet, and being somewhat widened and deepened, an increased depth of from 4 to 5 feet was obtained. The action of the stream causing undermining at the outer end, the end, 10 feet of the return and 100 feet of the northern side, were close-piled during the last fiscal year, the piles being driven to a depth of from 10 to 11 feet.

The work in all has a length of 580 feet, is 20 feet wide on top, with a return of the same width at the outer end.

Spring tides rise 45 feet, neaps 38 feet, at which stages of high water the depth at the end of the work and along the side where the stream was diverted is 18 and 14 feet, its end being distant some 400 feet from low water mark.

#### THE KENNEBECASIS.

This river takes its rise near the sources of the Petitcodiac, and after a south westerly course of about 20 miles flows into the St. John, through Kennebecas Bay.

During the season of 1888 an opening was made through the sand shoal below the Village of Hampton, and the channel approach to the draw in the highway bridge across the river at Perry's Point was straightened and deepened, and the work thus done was to enable the steamer plying between Indiantown (St. John) and Hampton to make her trips with regularity at any stage of water in the river.

#### MIZZONETTE.

Mizzonette Point, Gloucester County, is the extreme eastern end of the small peninsula that separates the upper part of Caraquet harbour from the Baie de Chaleurs.

It is distant by land from Grand Anse 9 miles east, and about 3 miles by water from the village of Caraquet, both of which stations are on the line of the Caraquet Railway.

To accommodate the residents of the locality, a contract was entered into on the 19th February, 1889, for the construction of a wharf, and the materials required having been got out during the winter, the work was commenced early in June, and had by the 30th or end of the fiscal year been so carried on that it was about a quarter done, the foundation of nine blocks being placed.

The work under construction consists in all of a length of 500 feet, 480 feet of which will be 12 feet wide on top, the remaining 20 feet or outer block 20 feet wide the whole composed of "blocks" and "spans," and giving at the outer end a depth of 2 feet at low water.

Spring tides rise 6 feet, neaps 4 feet.

#### MADAWASKA RIVER.

The Madawaska River takes its rise in Lake Temiscouta, and after flowing southerly a distance of about 20 miles enters the River St. John at Edmunston, thriving town on its northern bank, and the northern terminus of the New Brunswick Railway and its junction with the Temiscouata Railway.

During the last fiscal year, on its portion in New Brunswick, with the sum appropriated, the tow path along the river has been repaired, and boulders and sand bars obstructing its navigation removed.

#### PARTRIDGE ISLAND.

Partridge Island lies directly off the entrance to St. John Harbour dividing its approach into two channels, the principal of which is to the eastward of the island.

On the island is the station of the Marine Department for its fog-alarm, light, quarantine, &c., and to facilitate the landing of supplies, many years ago two small piers were built on the north-eastern side of the island by that Department. The pier extended to within about 60 feet of low water, forming between them a slip or dock 30 feet in width, having at high water springs a depth of 20 feet of water at the outer end, decreasing to 7 feet at the inner. Springs rise 28 feet, neaps 22 feet.

During a severe storm from the south-east in the early part of February, 1887 the outer portion of the eastern pier, owing to its having been insufficiently ballasted was badly damaged, 100 feet of it being entirely carried away, and the wreckage swept into the dock, which was rendered unserviceable.

This was removed, and the western pier, which had also been damaged, rendered available for vessels and boats. A contract was entered into 24th November, 1887 for the reconstruction of the eastern pier, which was satisfactorily completed 10th July, 1888, a length of 110 feet of new work being built, 20 feet wide on top, sloping 1 in 12 on the inner side and 1 in 4 on the outer.

## POINT DU CHÊNE.

Point du Chêne (Shediac Harbour) Westmorland County, the eastern terminus of the Intercolonial Railway and principal point of communication with ports on the Gulf of St. Lawrence and Prince Edward Island, is situated on the western side of Northumberland Straits about midway between the entrance to Richibucto Harbour on the north and Baie Verte on the south.

With the appropriation of the past year general repairs, as far as possible, have been effected to the ballast wharf and northern breakwater. The work done consisted of the raising, re-ballasting and re-planking the whole of the ballast wharf; putting in new mooring posts, and adding horizontal fenders to its face. The breakwater was ballasted where most necessary, the bolting of the close-piling re-driven, and what had been carried away replaced.

## RICHIBUCTO.

Richibucto Harbour, Kent County, is situated on the south-west shore of the Gulf of St. Lawrence, about 40 miles north from Shediac Harbour (Point du Chêne), the eastern terminus of the Intercolonial Railway.

The entrance, which lies between sand beaches, is obstructed by a shifting sand bar, and in 1873 the Department began the construction of a breakwater towards its improvement. This extended in a south-easterly direction from the point of the north beach, it being proposed that one also should be built in a north-easterly direction from the south beach, the object being to confine the waters to one permanent channel, and so carry them through the bar which it was supposed the increased current would remove by scouring.

With the amount appropriated for the past fiscal year the following work was done: 1st. The portion built in 1885, 225 feet long, and damaged in the winter of the same year, has been refilled with brush and stone, extra walings being put on, making the outer face of the work nearly close, and should prevent the ballast and brush being carried away.

2nd. Entirely new work for a length of 300 feet has been constructed, similar to the above as now reconstructed, making a length in all of 800 feet of piling, brush, stone, etc., protection works inward of the breakwater proper and covering nearly all of the beach exposed to damage from the action of gales from the eastward.

3rd. Several fender piles at and near the outer end of the breakwater proper, that had either been carried away or damaged by the ice, were replaced.

High water springs rise 4 feet; neaps, 2 feet 6 inches.

## SHIPPEGAN.

Shippegan Harbour, Gloucester County, formed by Pokesudie Island and the mainland on the west, and Shippegan Island on the east, is an arm of the Baie des Chaleurs, to which approach is had by Shippegan channel and gully from the Strait of Northumberland for small fishing craft of light draft.

In October, 1875, a contract was entered into for the construction of a breakwater 1,750 feet long to protect the entrance, and a dam 870 feet long to close the opening known as the "East Gully." Difficulty was had with the contractors, who suspended operations at the close of the summer of 1876. On the work being re-let in December, 1877, and operations resumed, April, 1878, the second contractors, about the end of July, stated their inability to proceed further with the work, and it was taken over by the Département.

At this time the dam was completed, about 900 feet of the breakwater raised to its proper height, and 500 feet of it partly built.

In October, 1879, a storm occurred, during which the tide rose 4 feet higher than before known, and the dam was seriously injured, while the outer 500 feet of the

breakwater, which had been left unfinished, was completely destroyed and the remaining part injured.

In 1880-81 the dam was repaired, raised and strengthened by piles driven 10 feet apart on each side, with walings and caps.

During 1883 portions of it that had again settled were raised where deemed unsafe, and an extension of 120 feet was added to the remains of the breakwater; a gap that had been made being closed as well, and other portions of the structure raised.

General repairs were again made in 1884-85, when 50 feet of the outer end was close-piled, the dam at the time being raised where settlement had taken place.

Further close-piling was done in 1886, and the work generally repaired.

During the past season a breach made in the winter of 1887-88 has been secured by the reconstruction of the length carried away (60 feet), general repairs also being effected.

Spring tides rise  $5\frac{1}{2}$  feet; neaps, 3 feet.

#### ST. JOHN RIVER.

During the fiscal year improvements to the navigable channel of the river have been effected at the following places:

At Bear Island Bar, the former channel used having been almost filled in with gravel boulders and sediment carried into it by the freshet of the former spring, boulders, sandbars, &c., were removed from the available remaining one, so as to make it more safe and passable.

At Meductic Falls a slide that had taken place, obstructing navigation, was removed, as well as some rocky ledges lower down, general improvements being made between Nackawick and Eel River by removal of boulders that had been carried into the channel by the ice freshet.

At Grand Falls several rocky ledges were removed by blasting. At Grand Falls to Quisibus, Fish River to St. Francis, improvements were made to the tow-paths and obstructions removed from the channel, this also being done on the St. Francis, Little Madawaska and Tobique Rivers, all tributary to the St. John.

During the summer of 1888 a channel 2,350 in length was opened to a depth of 14 feet at low water summer level, through the Oromocto Shoals, which lie between Thatch and Oromocto Islands, about 10 miles below Fredericton, and extend from near Belmont Wharf to the light at the mouth of the River Oromocto, opposite the foot of Thatch Island. They are composed of sand, silt, sawdust, etc., brought down the river during freshets, and dredging every few years is a necessity.

#### ST. JOHN HARBOUR.

The dredge "New Dominion" operated during May and June, 1889, for the Corporation of the City of St. John, in deepening the berth for vessels alongside the Anchor Line wharf—so called.

#### ST. LOUIS.

St. Louis, Kent County, is situated on the south bank of the Kouchibowguacis River, about 4 miles from its mouth and 7 miles northward from Richibucto, the shire town of the county, St. Louis and Richibucto both being stations on the Kent Northern Railway that connects with the Intercolonial system at Kent Junction, 46 miles north from Moncton.

To provide wharfage accommodation at St. Louis, a contract was entered into on 6th Nov., 1888, for the construction of a wharf 200 feet in length and 30 feet wide on top, to extend in a north-easterly direction from the outer end of the south abutment of the bridge. This wharf will have at it a depth of 7 feet at low water spring tides, which rise here  $3\frac{1}{2}$  feet, neaps 2 feet. Materials were got out during the winter and the work commenced during the last week of the fiscal year.



## UPPER SALMON RIVER.

Upper Salmon River, Albert County, empties into Salisbury Bay at the head of the Bay of Fundy, about 4 miles north-east from Matthews Head, and 10 miles north-west from Cape Enragé.

At its mouth is situated the thriving village of Alma, the proposed terminus of the Albert Southern Railway, now about approaching completion, by which it will be distant 16 miles from Harvey, the present terminus of the Albert County Railway.

For the protection of vessels visiting the harbour, a contract was entered into in 1883 for the construction of 180 feet of breakwater on the western side of the entrance, and this work was finished in the fall of the same year.

During a severe storm that occurred on the 2nd and 3rd November, 1888, a length of about 50 feet of the sheathing, face timbers, &c., of the sloping face near the outer end of the work were carried away, which were made good by the Department during the latter part of the same month.

The work, which is some 425 feet long and 20 feet high at the outer end, is used entirely as a breakwater, no loading whatever being done at it, and has rendered great service as a shelter to vessels visiting the port.

Spring tides rise 40 feet; neaps 34 feet.

## QUEBEC.

## BAIE ST. PAUL.

Baie St. Paul is situated on the north shore of the St. Lawrence, about 60 miles below Quebec.

During the fiscal year the present wharf situated at Cap aux Corbeaux was extended a length of 60 feet by a width of 50 feet, the height of the outside being 30 feet, and reaching to from 12 to 14 feet depth at low water. The work was done by contract.

In 1874 and 1875 an isolated block, 200 feet by 30 feet wide, with a head 60 feet long and 50 feet wide was built, about 3,000 feet from high water mark, spring tides.

During the past fiscal year some small general necessary repairs were executed, but the block is still in a dilapidated condition.

## BERTHIER (EN BAS).

Berthier, *en bas*, is in the County of Montmagny, and is situated on the south shore of the St. Lawrence, 24 miles below Quebec.

Thirty-six years ago a pier, 586 feet in length and 30 feet in width, with the exception of the last 100 feet of the head, which is 60 feet in width, was constructed.

During the last fiscal year 450 feet of the flooring was renewed. Mooring posts were renewed where necessary and other repairs made to the wharf.

Spring tides rise 20 feet, neaps 15. The depth of water at low tide at head of the wharf is from 14 to 15 feet.

## CAP À L'AIGLE.

Cap à L'Aigle is situated on the north shore of the St. Lawrence, three miles from Murray Bay, County of Charlevoix. During the seasons of 1881 and 1882 a landing pier, 160 feet in length by 35 in width, with 12 feet depth at the southerly end at low water, was built by the Department.

During the last fiscal year some slight repairs were made to the pier to prevent its destruction.

Spring tides rise 19 and neaps 12 feet.

## CAP CHATTE.

Cap Chatte is situated on the St. Lawrence; at the extreme western limit of the County of Gaspé.

With the amount appropriated for expenditure in 1888-89, the channel has been deepened 2 feet, the course of the river at its entrance made wider by the removal of battures of solid rock on each side, or by reducing them to the level of the bed of the river. Schooners can now run aground at the mouth of the river waiting for the tide without the risk of being thrown on the points of rocks which obstructed it before—as they have been all removed. Smaller craft are now enabled to run into the inner harbour at any stage of the tide.

The outside and inside reef, which rendered the outlet of vessels in stormy or calm weather very difficult and dangerous, have been partly removed—that is, their projecting points cut off—so that a straight and wider channel now exists affording greater facilities for vessels coming in or going out.

#### CAP SANTÉ.

The parish of Cap Santé is situated in the County of Portneuf, on the northern shore of the St. Lawrence, and is about 30 miles above Quebec.

At neap tides the boats can only approach the wharf when the water has risen to the height of 7 feet 9 inches, and even then with danger, owing to the boulders which obstruct the river.

These boulders form part of a reef which extends to the main channel of the St. Lawrence, a distance of about 1,100 feet, and a number of the most dangerous were blasted and removed during the year.

#### CHICOUTIMI.

The town of Chicoutimi is situated on the southern side of the Saguenay River, 71½ miles from Tadoussac, and is at the head of navigation.

The length of the wharf at this place is 282 feet, with a width of 127 feet, and there is a depth, at its outer end, of 7 feet at extreme low water. During the last fiscal year the flooring of the wharf was almost entirely renewed. On the north side 125 feet in length by 40 feet in width was raised 5 feet. Six fenders, 30 feet in length, 14 inches square, were placed at the end of the wharf.

#### COTEAU DU LAC.

Coteau du Lac, or St. Ignace de Soulanges, is situated on the north side of the River St. Lawrence, immediately below the Chute Verte, in the County of Soulanges, 34 miles above Montreal.

At this place the water rises 3 feet during the heaviest freshets, but generally the difference between high and low water is only 18 inches.

A wharf has been built, consisting of a block 100 feet long by 20 feet wide, with an approach of 110 feet, which has a width of 20 feet. There is 6 feet of water at the outer side of the block, the top of which is 5 feet above water line.

A passenger and freight shed, 20 feet by 24 feet was built on the lower side of the approach.

#### COTEAU LANDING.

Coteau Landing is situated on the north shore of the St. Lawrence, at the foot of Lake St. Francis. It is the chief town of the County of Soulanges, 2 miles from Coteau Station on the Grand Trunk Railway, and 36 miles from Montreal.

At the close of the fiscal year the Department was engaged in rebuilding, for a length of 800 feet, the approach to the wharf at which the Richelieu and Ontario Company's steamers make regular calls.

#### ETANG DU NORD.

Etang du Nord is at the western end of Grindstone Island, one of the Magdalen Group, in the Gulf of St. Lawrence.

In 1880-81 a breakwater was commenced on Etang du Nord Bay, the intention being to construct it some 750 or 800 feet in length, 32 feet in width, with a mean height of 20 feet.

In 1883-84, when 225 feet of breakwater had been built, a storm took place which carried the structure away.

As it was found almost impossible to build a breakwater at this site, on account of its being exposed to the violent storms of the Atlantic, a change was made in the location to the south side of Isle Aux Goélards, about three-quarters of a mile to the south-west of the original site. That part of the breakwater which was sunk in 1887-88 was filled with stone during the fiscal year ended the 30th June last.

This breakwater is 500 feet long, 32 feet wide, and from 12 to 28 feet in height, with 21 feet depth of water at the end at low tides.

#### ILE PERROT.

Ile Perrot is in the county of Vaudreuil at the mouth of the River Ottawa, which it divides into two branches. Both the Grand Trunk and the Canadian Pacific Railways cross the northern end of the island, but the nearest station to the island is Vaudreuil and St. Anne de Bellevue. In 1887-88 a wharf was built on the south side of the island, on Lake St. Louis, one and a half miles below the church.

It consists of a block of 130 feet in length by 30 feet in width, with a depth of 8 feet of water, and is 580 feet from the shore. It was built by contract.

During the last fiscal year a length of 325 feet of pier work, 18 feet in width, was built from the shore outwards, leaving a length of 275 feet yet to be built.

#### ILE VERTE.

The parish of Isle Verte is in the County of Temiscouta, and is situated nine miles below Rivière du Loup and 123 miles below Quebec.

In 1887 an isolated block, 50 by 40 feet, was built, and during the last fiscal year an approach from the block to the shore has been commenced, but there still remains 800 feet to be constructed to complete the work.

#### LA GRANDE DÉCHARGE.

La Grande Décharge is the main outlet which passes the waters of Lake St. John into the River Saguenay.

During the past fiscal year a pier, 22 feet in length by 22 feet in width and 20 feet in height, and an ice-breaker 26 feet with a base of 16 feet in height, has been built.

#### LAPRAIRIE.

Laprairie is the *chef lieu* of the county of the same name, and is situated on the South shore of the River St. Lawrence, 7 miles above Montreal.

During the winter of 1886-87 two ice piers were built, to prevent damage being done during the breaking up of the ice in the spring, and they have proved thoroughly satisfactory.

In 1887-88, an embankment, 1,600 feet in length, was constructed, and during the floods of the two last winters it has proved most successful. Along the shore east of the ice pier a cribwork was built on a length of 480 feet. It is 10 feet in height and filled principally with stone.

During the last fiscal year another cribwork wall, 335 feet in length, was built to a height of 11 feet below low water, from the steamboat wharf westward. It is built of open work, 20 feet in width, with a batter of 1 in 12 on the face.

#### LES EBOULEMENTS.

The village of Les Eboulements, in the County of Charlevoix, is situated on the north shore of the St. Lawrence, 69 miles below Quebec.

In 1853 a landing pier, 920 feet in length by 30½ feet in width, with 12 feet depth of water at its outer end at extreme low tides, was constructed.

In 1875 a wing 50 feet long by 41½ feet wide was added to the easterly side of the original pier.

During the past fiscal year the slip on the west side was repaired, as well as that on the east. The superstructure was also repaired, and mooring posts were renewed where necessary.

A room for the accommodation of passengers waiting for the boat was built on the outer end of present pier. It is constructed on posts. Its dimensions are 45 by 25 feet; the roof is covered with metal; the whole building painted with waterproof paint.

#### LONGUEUIL.

The town of Longueuil, the *chef lieu* of the County of Chambly, is situated on the south side of the River St. Lawrence nearly opposite the eastern end of the City of Montreal. The Sorel and Montreal and the South-Eastern Railways have a station at Longueuil; the Richelieu and Ontario Navigation Company runs a ferry which makes hourly trips between Longueuil and Montreal.

The Richelieu and Ontario Navigation Company own a wharf at the upper end of the town, but its long distance from the business or centre portion, besides the increasing trade of the locality, demanded more wharfing accommodation, and at the request of the Town Council the Department commenced, in the spring of 1887, the construction of a pier, for the completion of which a contract has been entered into with Mr. A. Chagnon.

The pier when completed will be 1,105 feet in length, including a block at the outer end 40 feet by 80 feet; 90 feet of the pier is 30 feet in width, and the remaining 975 feet 20 feet. Six buttresses on the lower side will also be built. At the block there are 7 feet of water at its lowest stage. The pier is built 9 feet 6 inches above low water line, and it is expected that the wharf will be completed next summer.

#### MURRAY BAY.

Murray Bay is in the County of Charlevoix, on the north shore of the St. Lawrence, 83½ miles below Quebec. The steamers of the Saguenay Navigation Company call daily, excepting on Monday, on both upward and downward trips.

In 1855 a pier 475 feet in length by 30½ feet wide, with the exception of the block at the outer end, which was 180 feet in width, was built at Pointe au Pic, about 3 miles distant from the village of Murray Bay.

In 1875 a further addition of 30 feet was made to the outer block, which gave a depth of 18 feet at low water spring tides.

Spring tides rise from 18 to 20 feet; neaps 12.

During the last fiscal year the old slip on the east side of the pier, which had become useless, was built up to the height of the wharf and planked over, thereby giving an additional area of 2,310 square feet. Ninety feet of the middle roadway at the inshore end was refilled with gravel, instead of building it with plank. A new waiting-room, 30 by 24 feet, was constructed, and the old freight shed remodelled and other general and necessary repairs were made to different parts of the wharf.

Some heavy boulders and rocky shoals, which were a source of danger at the entrance to the harbor, were either removed or partially so.

#### NICOLET.

The town of Nicolet, distant 13 miles from Three Rivers and 28 from Sorel, is situated upon the eastern side of the river of that name, which takes its rise in Lake Nicolet, in the centre of Wolfe County, and after a course of 80 miles flows through the parishes of L'Esperance, St. Paul of Chester, St. Christophe, St. Albert, St. Clothilde, St. Monique and St. Jean Baptiste de Nicolet, emptying into the St. Lawrence on its southern side at the foot of Lake St. Peter.

The trade of Nicolet is chiefly in lumber. There are five saw mills on the Nicolet River, which are kept supplied with timber from the limits above.

Thirty-nine million two hundred thousand feet (B.M.) of timber, valued at \$274,400, were exported last year from these mills. Much of this was carried to the United States.

In the year 1881 a contract was entered into for the execution of dredging and pile-protection work at the outlet of the river, to form a harbour of refuge for schooners.

In the summer of 1882 the materials for this work were collected and prepared. In 1883 the water of the St. Lawrence was too high to admit of the pile-driving being proceeded with, so that only dredging could be done.

In the summer of 1884 the work of dredging the channel was completed. This channel is 5,000 feet in length by 75 feet in width, and was dredged to a depth of 8 feet at the lowest stage of water in Lake St. Peter.

The same year the pile-protection work was commenced at the western side of the harbour, 250 feet being built.

In the summer of 1885 the pile-protection work was extended to a length of 850 feet. In 1886 the work was increased to a length of 1,410 feet, and in 1887 to 2,038 feet.

In 1888 the work was resumed on the 20th July and was discontinued on the 29th September—543 lineal feet having been built during the fiscal year.

#### PAPINEAUVILLE.

A channel or opening 1,000 feet in length and 50 feet in width, except at the inner end, where it is 75 feet wide, has been opened to a depth of 7 feet below low water in the river through the peninsula at Papineauville, separating the Ottawa from Pentecost Bay, to give free access to the bay at all times, and dredging was done to a depth of 7 feet in front of and around the wharf at Papineauville, to permit the approach of steamers during the lower stages of water in the Ottawa.

#### PERCÉ.

Percé is situated in the County of Gaspé, and is for judicial and all other purposes the *chef lieu* or chief town of the District of Gaspé. By the public highway it is 156 miles from the Intercolonial Railway at Campbellton, N.B. By steamer "Admiral" it is only thirteen hours from Dalhousie, N.B., railway station. The Quebec and Gulf Port steamers call there also, to land and take freight and passengers in boats.

The landing pier commenced in the winter of 1888 was completed in May last. It was built by contract, and its dimensions are: length over all on top 320 feet; width on top, 20 feet; height at outer end, 36½ feet—of which 26½ feet only are above the bed of the river, it having settled down some 10 feet during construction; depth of water at outer end is 16 feet at low spring tides, with a rise and fall of from 5 feet to 5 feet 6 inches in full spring tides and 3 feet ordinary neap tides.

#### POINTE AUX ANGLAIS.

Through the boulder shoals in front of the wharf at Pointe aux Anglais a channel 100 feet in width has been opened to a depth of 7 feet at low water, eastwardly from the wharf to deep water in the Ottawa.

#### PORT AU PERSIL.

Port au Persil is a small village some 15 miles below Murray Bay, on the north shore of the St. Lawrence.

During the fiscal year ended 30th June, 1889, the most dangerous boulders and rocks were removed from the harbour.

#### RAPIDE MANIGANCE.

This rapid is on the St. Maurice River. It is one of the largest between Grandes Piles and La Tuque. It is 5½ miles above the outlet of the River Mekinac, 18 miles above Grandes Piles, and 55 miles north of Three Rivers.

There is a good channel obstructed however at points by boulders, running through this rapid, varying in depth from 9 to 18 feet at low water (summer level).

In October, 1888, 123 large boulders, measuring 210 cubic yards, were removed.

## RIVER DU LIÈVRE.

The River du Lièvre flows into the Ottawa, 18 miles below the city of Ottawa. Its general course is southerly, and its width for 20 miles above the mouth varies from 300 to 600 feet.

To illustrate the great trade and business done on this river, it is only necessary to give the output of timber and phosphate during the last twelve months:—

Railway ties .....	40,000
Cedar posts.....	30,000
Square timber, (cubic feet).....	154,395
Lumber, (M. B. M.).....	46,500,000
Phosphate' (tons) .....	27,537
Mica, (lbs) .....	10,000
Feltspar, (tons) .....	50

It was with the intention of fostering especially the phosphate industry and facilitating its transport from the mines to the nearest railway, which is at Buckingham, that a contract for the construction of a lock and dam at the Little Rapids was entered into in December, 1886, with Messrs. Poupore & Co. The lock and dam will be of sufficient height to flood the Long Rapids, about  $7\frac{1}{2}$  miles above the site of the lock, and therefore will give an uninterrupted navigation of 22 miles—that is, from the village of Buckingham to the foot of High Falls. The lock has a length of 160 feet between the gates and 32 feet 7 inches in breadth, with 8 feet of water on the mitre sills. Entrance piers are also under construction. Proper provision will be made for the passage of timber over the dam, which is being constructed 11 feet above low water at the head of the Little Rapids.

## RIVIÈRE DU LOUP (EN BAS.)

Rivière du Loup in the County of Temiscouata, is on the south shore of the St. Lawrence, and is distant from Quebec 114 miles. The work of deepening the river of sand banks was continued during the past fiscal year, and boats and schooners of from ten to one hundred tons burden can now load and discharge at Pelletier's wharf at the town.

## RIVER L'ASSOMPTION.

At Charlemange, at the junction of the L'Assomption with the north branch of the Ottawa, at the foot of the island of Montreal, a shoal was removed together with obstructions which had gathered in the channel at that point.

## RIVER MEKINAC.

The River Mekinac takes its rise in Lake Mekinac, in the County of Chaplain, and flows southward a distance of 18 miles, and empties into the St. Maurice  $49\frac{1}{2}$  miles from the city of Three Rivers. Its depth varies from 1 to 12 feet.

There are several rapids on this river. One, which is 6 miles from its outlet, is about a mile long, and is called the "Rapide Blanc."

The communication between St. Roch and Les Grandes Piles in summer is by boat and in winter by the ice; from Grandes Piles the train, twice a day, carries passengers and freight to Three Rivers.

During the month of September, 1888, some boulders were removed from the channel of the Rapide Blanc, and its navigation was improved thereby.

## RIVIÈRE OUELLE.

Rivière Ouelle, in the County Kamouraska, is on the south shore of the St. Lawrence, 75 miles below Quebec. The wharf, 1225 feet in length, with a width of 35 feet and a "T," at the head, 50 feet in width, and 105 feet in length, was built many years ago.

This wharf is situated at *Pointe aux Orignaux*, six miles from *Rivière Ouelle* and six from *St. Denis*. The depth of water at the head of this wharf is 16 feet at the lowest tide which has a rise of 20 feet at springs.

A small amount of repairs only were executed.

#### RIVER RICHELIEU AT SOREL.

The Richelieu flows into the *St. Lawrence*, on its southern shore, at *Sorel*, 45 miles below the city of *Montreal* and 37 miles above *Three Rivers*.

In addition to the two ice piers spoken of in the report of last year as having been built to afford protection to the then town (now city) of *Sorel*, during the run of ice in the spring, a third was built during the last fiscal year, for the same purpose as the former two. It stands in 12 feet of water, about 200 feet from the shore, and is situated 2,400 feet further up the stream than the second pier built in the previous year.

#### RIVER RICHELIEU.

A channel was opened through two shoals in the Richelieu, at *St. Antoine*, off *Gatiens* and *Gendron's* wharves, to a depth of 7 feet at low water in the river.

At *Lacolle* a loading berth, 250 feet in length, 50 feet in width and 8 feet deep at the outer and 7 feet deep at the inner end, was opened alongside of the wharf.

#### RIVER ST. FRANCIS.

This river takes its rise in *Lake St. Francis*, in the County of *Beauce*. It flows south-west through the Counties of *Beauce* and *Wolfe*, crossing the north-west corner of the County of *Compton*, and takes a sharp turn to the north-west, at *Lennoxville*. It then flows through the counties of *Sherbrooke*, *Richmond*, *Drummond* and *Yamaska*, and empties into *Lake St. Peter* on its southern shore, 11 miles below the *Isles of Sorel*, and 3 miles from the mouth of the *River Yamaska*.

The bed of the river at its outlet is divided into several channels by a group of small islands.

At the mouth of the river and other points between it and the saw mills, shoals existed, which interfered greatly with the navigation. To relieve this, dredging was begun on the 21st May, 1888, and discontinued on the 6th July.

On the 29th August, 1888, work was resumed and continued till the 8th November, at which date a channel 40 feet wide was opened from *Hertel* channel down to the first bend, 1,100 feet in length and 5 feet deep at low water.

Work was commenced opposite *Tourville's Mills* on the 24th June last and was in progress on the 1st July.

#### RIVER YAMACHICHE.

This river takes its rise in the *Laurentide Mountains*, flows through the County of *St. Maurice* and empties into *Lake St. Peter*, about sixteen miles above *Three Rivers*.

The western bank of this river is, for the most part high, and it as well as the low-lying eastern shore are composed of clay.

At the point where this river crosses the western limit of the Parish of *St. Boniface de Shawenigan* a land slide occurred, by which the western bank for a distance of over 3,000 feet by a width averaging 5 acres slipped completely across the river and lodged on the opposite side.

This had the effect of obstructing the river, and inundating the land above.

In 1884 a channel was partially cut through the obstruction, so as to bring the water to its normal level and free the flooded land. In the summer of 1885 this cut was continued and opened to a width of from 6 to 8 feet, by about 10 feet in depth. This had the effect of reducing the level of the water sufficiently to permit of the cultivation of many hundred acres of land which had been flooded.

In the summer of 1888 the work of deepening the channel was resumed over a distance of about 2,500 feet, which had the effect of reducing the water an additional range of 8 feet, and brought it to its normal stage.

## RIVER YAMASKA.

This river takes its rise in the Township of Bolton, in the County of Brome. It forms an outlet for several large lakes, and has a course of about 90 miles. It flows through the counties of Brome, Missisquoi, Rouville, Bagot and St. Hyacinthe, Richelieu and Yamaska, and empties into the head of Lake St. Peter on its southern side, eight miles below Sorel.

A contract for the construction of a lift lock and dam at Ile à Cardin, one mile and three-quarters below the village of St. Michel de Yamaska and about four and a-half miles from the mouth of the river, was entered into in the year 1880. This work was completed in 1886. It gives a rise of  $5\frac{1}{2}$  feet.

By the construction of these works, and by dredging done subsequently on the shoal below the lock, the river has been rendered navigable for vessels of moderate draught up to Belle Point, or Rapide de la Grosse-Roche a distance of twenty miles.

In August last, 1888, the crib work at the lower end of the lock was undermined for a distance of 185 feet, and a row of sheet piles were then driven along the upper side of the crib, to prevent the water from rushing into the river by the break, and also relieve the pressure of water on the cribs at the breaks, so that the work of filling up could be proceeded with. Bags of clay and sand were then used to stop up the breaks.

In October of the same year further damage was done to the works, which were made good in the same manner.

The lock was opened 382 times during the season of 1888.

## THE SHIP CHANNEL—RIVER ST. LAWRENCE.

The first movement in the matter of a deep-water channel for ships between Montreal and Quebec was made in 1825. In February, 1826, a petition from certain of the merchants of Montreal was presented to the Legislative Assembly of Lower Canada, in which it was stated that the interest and prosperity of the Province, as well as of Upper Canada, required that the removal of obstructions should be proceeded with, and the river, to as great an extent as possible, rendered navigable for vessels from and to the sea; and further, that for the sum of £36,000 a channel 16 feet deep at low water could be made, which would permit the passage, at those seasons of the year when the water was the lowest, of vessels of 250 tons burthen with a full cargo.

Between 1826 and 1831 efforts were made to induce the Government to grant aid to the enterprise, but without any results. From 1831 to 1836 the matter remained in abeyance, when the merchants of Montreal again approached the Legislature for aid to make a survey of Lake St. Peter, and met with a refusal.

In 1838 the Montreal Committee of Trade petitioned the Legislative Assembly for a grant of money to make a survey of Lake St. Peter, and stated that the navigation of the lake during the greater part of each season was limited to vessels drawing from 10 to 12 feet; that the draught of vessels in the trade between Montreal and the United Kingdom averaged from 14 to 16 feet; and that a considerable portion of their cargoes had to be transferred, to enable them to pass through the lake, thus entailing upon the trade at Montreal an immense annual expense, as well as causing detention to the ships. In reply to this petition the sum of £500 was appropriated "as an aid towards causing a survey to be made of Lake St. Peter in this province."

Nothing more of an official character appears until 1841, when the Provincial Secretary informed the chairman of the Select Committee of the House of Assembly "that the improvement of the navigation of Lake St. Peter will be considered with other public works."

From the report of this Select Committee it is gathered that a survey of the lake was in progress; that during the year 1840, 97 vessels, aggregating 28,660 tons, arrived from sea in the port of Montreal; and that the charges for towage and, lighterage on 42 vessels of a burthen of 14, 179 tons, amounted to £6,141.



Actual operations soon followed, and up to the close of 1845 an expenditure amounting to £59,994 had been made, of which £37,937 went for dredges, steamers, outfit, &c.

In May, 1846, before a committee of the House of Assembly, it was elicited that a straight cut had been made in Lake St. Peter to a depth about equal to the old natural channel, and to a width varying from 100 to 150 feet, and that a vessel had passed through it in October, 1845.

A difference of opinion having arisen as to whether it was advisable to abandon the new cut and proceed to improve the old, or natural channel, operations were suspended early in June, 1846, and Captain Bayfield, R.N., was employed to investigate and report relative thereto, which he did to the effect that the new channel should be carried on to completion to a depth of 14 feet below ordinary summer low water, and to a breadth of 300 feet. This suggestion having been accepted work was resumed late in the fall of 1846, but opposition to the new, or straight channel, had not ceased, and the matter again came before a Select Committee of the Legislative Assembly, which reported that they had considered the voluminous documents submitted to them, that they had evidence that the cut through the St. Francis bank to make an artificial channel through Lake St. Peter had been undertaken and proceeded with on erroneous data of the contemplated expenditure. In the spring of 1847 work in the new channel was resumed and carried on till September of that year, when it was suspended.

In August, 1850, this work was transferred from the Commissioners of Public Works of the Province to the Harbour Commissioners of Montreal, who, in October, 1850, instructed a board of experts to report on Lake St. Peter with the view of adopting the best means for obtaining a 16-foot channel at the lowest stage of water, and in the instructions prepared by the Harbour Commissioners it is stated that an outlay of \$320,000 had been made in the new channel up to 1846, when the work had been stopped by the Provincial Government.

The board of experts advised that the old channel should be adopted, and improved to a width of 450 feet and a depth of 16 feet, and that the new channel should be abandoned.

In June, 1851, operations were commenced in the old—the present channel,—and continued by the Harbor Commissioners until the close of the season of 1854, when the channel was virtually completed to the depth of 16½ feet at low water, and to a width varying from 250 to 300 feet, the expenditure by the commissioners amounting to £74,000, including £10,000 paid to the Board of Works for two dredges.

In March, 1855, Mr. T. C. Keefer, C.E., reported to the Commissioners, reviewing the past progress of the works and giving his views as to future operations. From that report it is learned that the “attainment of a draught of 20 feet at low water is as practicable as it is desirable,” and that the cost of a channel to that depth, and a width of 300 feet through all the obstructions met with between Montreal and Quebec, might be placed at £90,000.

In November, 1857, Messrs. Childe, McAlpine & Kirkwood, were appointed a board of engineers to consider the best means of providing additional harbour accommodation at the port of Montreal and they were asked to state whether the Commissioners had or had not acted wisely in deepening Lake St. Peter, and otherwise improving the navigation between Montreal and Quebec, and they reported “that the port of Montreal is the proper place for transferring cargoes from the interior to sea-going vessels, and therefore the Harbour Commissioners are right in their plans for deepening the channel below Montreal, so as to allow vessels drawing 20 feet to come to the latter port.”

In November, 1865, the 20-foot channel, 300 feet in width, had been accomplished. Between 1866 and 1869 operations were confined to cleaning up, widening where necessary, and improving the channel; and as a natural sequence, facilities having been given for the passage of vessels drawing up to 20 feet, the size and dimensions of vessels were increased to such an extent that an agitation arose to obtain a depth of 24 feet, and in May, 1873, an Act was assented to granting a loan of

\$1,500,000.00 for completing the ship channel in Lake St. Peter and the River St. Lawrence to a depth of not less than 22 feet at low water, and a width of not less than 300 feet; and in July, 1873, an Order in Council was passed giving permission to the Harbour Commissioners to purchase the necessary dredging plant.

The depth of 22 feet was completed in November, 1878, when an official test was made. In October, 1882, the channel was again tested, and a clear depth of 25 feet at low water was found at all points above Cap à la Roche, where and at Cape Charles adjoining, advantage had to be taken of a good average tide to pass with the full depth available elsewhere.

In June, 1883, further legislation having been obtained, work was commenced in obtaining a depth of 27½ feet at low water in the ship channel, except at Cap à la Roche and Cape Charles, where that depth could be obtained at nearly half tide.

With the exception of Cap à la Roche and Cape Charles, the depth of 27½ feet was completed in November, 1888, and tested by the passage of the *S. S. "Sardinian"* carrying a spar lashed to her side extending to that depth.

During the later years of work on this channel the merchants and others interested in the trade and traffic of the port of Montreal, advanced the statement that that trade and traffic should not bear the burden of the cost of the ship channel, which should be deemed to be a national and not a local work, and not for local purposes only, but for the purposes of the Dominion; and with this view an Act was passed during the Session of 1888 relieving the Harbour Commissioners of Montreal of their indebtedness with respect to the ship channel, and transferring the work, plant, &c., to the Department of Public Works, and during the season of 1888 operations for the completion of the channel were carried on by the Harbour Commissioners for and on behalf of the Department.

In January 1889, the control and management of the work was assumed by the Department. During the winter extensive repairs were made to the dredging plant, which, on the opening of navigation, was placed to work at Cap à la Roche, Poulrier Rayer and Cape Charles, in deepening the channel at those points, which are adjacent to each other, to 27½ feet below low water, spring tides, and up to the close of the fiscal year a fair commencement had been made.

The channel which has been opened is 300 feet wide on the straight portions, and 320 feet wide at the bends, but it has been found difficult in many places to navigate large vessels by reason of these bends, or the position of the channel where the "set of the current" has been crossed obliquely, and a further expenditure will have to be made to improve the channel at such points.

#### ST. ALPHONSE.

St. Alphonse is at the head of Ha! Ha! Bay, River Saguenay, about 66 miles above its mouth.

This wharf is 445 feet long and 25 feet wide, the end block being 77 feet in length, with a width of 55 feet. A slip has been built on the north side of the wharf in order to make it easier for vessels of small tonnage to load and unload their cargoes.

The flooring of the wharf was also renewed over a length of 300 feet with spruce timber 6 inches square.

#### STE. ANNE DU SAGUENAY.

Ste. Anne du Saguenay is in the County of Chicoutimi, on the River Saguenay, opposite Chicoutimi.

Timber required for the proposed wharf having been obtained during the previous year, the work of construction was commenced during the past year, and a length of 77 feet was built.

There is a depth of water at its outer end of 2 feet at low water. neaps.

#### ST. LAURENT.

The village of St. Laurent is situated on the Island of Orleans, 15 miles below Quebec.

The pier at this place is 583 feet in length, the block at its outer end being 104 feet by 32 feet wide, the remainder 32 feet in width. Some general necessary repairs were made to enable it to be used for traffic.

#### ST. PLACIDE.

Dredging was done in front of and also to the westward of the wharf at St. Placide, to increase the area of the basin and afford more room for the turning and accomodation of vesels. An old wharf crib, lying to the south-west on the shoal fronting the wharf was removed, as it was in the high water channel, and formed a serious obstruction to vessels entering from the eastward.

#### STE. ANNE DE LA PERADE.

The river of St. Anne takes its rise in the County of Quebec. It crosses the counties of Portneuf and Champlain, and empties into the St. Lawrence on the north shore, at Ste. Anne de la Perade, 54 miles above Quebec and 23 miles below Three Rivers.

This river is for the most part very shallow, and abounds in rapids. In the vicinity of its outlet the banks are low, but some miles further inland they are much higher.

The depth of water at the outlet varies from 2 to 5 feet.

To give easier access to the saw-mills and factories at the village, some dredging was done in the mouth of the river. A cut was dredged to a depth of 6 feet at low water, 30 feet wide by 1,028 in length.

Owing to the shallowness of the water this work could be done only at high tide.

The tides here vary from 1 to 5 feet.

In the summer of 1888 the dredging was resumed on the 4th June, and was discontinued on the 7th July, during which time a channel 30 feet long was dredged to a depth of 6 feet.

#### STE. ANNE DE SOREL.

Ste. Anne de Sorel, in the County of Richelieu, is three miles below Sorel, on the southern shore of the St. Lawrence.

To afford additional protection to the farm houses and buildings of this rich agricultural but low-lying district, another ice pier was built during the last fiscal year at the entrance to the Chenal du Moine, about  $1\frac{1}{2}$  miles below the Village of Ste. Anne.

The dimensions of this pier are 30 feet by 24 feet, and 21 feet 6 inches in height.

#### TADOUSSAC.

Tadoussac, or Anse à l'Eau, is at the mouth of the River Saguenay, on its southern bank

The wharf at this place is 366 feet in length, with a width of 26 feet, the end block being 40 by 50 feet. The height of the wharf at the end is 29 feet, and there is a depth of  $7\frac{1}{2}$  feet at extreme low water.

During the past year a part of this wharf was rebuilt and raised 3 feet, a slip was constructed and the flooring renewed.

#### TROIS PISTOLES.

Trois Pistoles, in the County of Temiscouata, is on the south shore of the St. Lawrence, 148 miles below Quebec.

During the last fiscal year an extension 60 feet in length by 30 feet in width was commenced, but was not completed at the close of the fiscal year.

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## ONTARIO.

### BELLEVILLE.

Belleville is the capital of the County of Hastings, and is situated at the mouth of the River Moira, which flows into the Bay of Quinté, 43 miles west of Kingston and 113 east of Toronto.

The harbour is well sheltered, but was obstructed by several shoals of sawdust and mill refuse brought down by the river. In 1874 the Department continued the work of dredging which the municipality had commenced, and in 1875 and subsequent years, up to 1882, further dredging was done, towards which the municipality contributed \$3,000.

In 1884 a contract was entered into for deepening the harbour, and the work continued for two years, the expenditure being \$8,170.42.

In September, 1886, a further contract was entered into for dredging a channel as an outlet for the waters of the River Moira during freshets, the municipality paying half the expense. This contract was completed in July, 1889.

### BRIGHTON.

Brighton, Northumberland County, is on Presqu'île Harbour, Lake Ontario, 22 miles from Belleville.

Dredging was executed to a depth of 14 feet below low water in Lake Ontario, in front of and to the eastward of the wharf at Brighton, and several sunken cribs in proximity to the wharf, which were the cause of difficulty and danger to vessels approaching or leaving, were successfully removed.

### COBOURG.

The harbour of Cobourg, in the County of Northumberland, is situated on the north shore of Lake Ontario, some 96 miles west of Kingston and 72 miles from Toronto, in the electoral district of West Northumberland.

The work of forming the harbour of Cobourg was commenced by a company organized by an Act of Parliament in 1829. In 1842 the works were assumed by the Government and held until the 27th May, 1850, when they were sold to the Town Council of Cobourg.

At the time of Confederation, 1867, the work consisted of two piers, the united length of which was 2,047 feet. They were 190 feet apart at the entrance of the harbour, and enclosed an area of about  $12\frac{1}{2}$  acres of water, the depth at the outer end of the east pier being 14 feet, decreasing to 7 or 8 feet in the centre of the harbour.

In 1873 a contract was entered into for the construction of a pier 1,500 feet in length, 30 feet wide, from the foot of Hibernia street, and the work was completed in 1876, towards the cost of which the Harbour Trust contributed.

In 1881-82 a further extension of this pier, in a south easterly direction, was placed under contract and completed in 1883.

The works carried out during the fiscal year 1888-89 consisted in the reconstruction of the superstructure of the outer 150 feet of the Langevin or western pier, under a contract with Mr. J. W. Dinwoodie. The superstructure of the west pier of the original harbour was found to be badly decayed, and repairs were made to it during the months of April, May and June, and at the close of the fiscal year were still in progress.

### GODERICH.

Goderich, Huron County, is at the mouth of the River Maitland, which flows into Lake Huron on the eastern coast, 60 miles above Sarnia.

A channel was opened to a depth of  $18\frac{1}{2}$  feet below lake level, through the shoal off the mouth of the harbour. Dredging was also done inside the harbour at the Commercial wharf, and along the south pier to a depth of 17 feet.

## KINCARDINE.

This harbour is situated on the eastern coast of Lake Huron, 31 miles north of Goderich, at the mouth of the Penetangore River.

In 1856 two parallel piers were built 100 feet apart, the northern pier being 540 feet in length and the southern one 290 feet, the latter being extended and completed in 1868.

In 1869 a survey of the harbour was made, when it was found that the depth between the entrance piers was from 7 to 10 feet and in the inner basin from 6 to 10 feet.

In 1872 dredging was commenced, and was continued until 1877, when the whole of the inner basin, about 4 acres in extent, had been dredged to 12 feet, and the entrance to 13 feet.

Since then further dredging has been done, giving 15 feet at the entrance along the northern pier. The entrance piers have also been considerably extended, the north pier being now 1,225 feet in length, the southern one 900 feet in length, with a width of entrance of 200 feet, so as to afford greater facility for entering the harbour.

In 1876 the northern pier was damaged by a storm, and this had to be repaired and the superstructure re-built.

In November, 1881, a contract was let for the construction of 790 feet of pile protection work on the south side of the southern pier, which was completed in 1883.

From the 1st of July, 1882, to the 30th of June, 1889, yearly improvements have taken place, consisting of dredging and repairs to the northern and southern piers. The work of rebuilding the wharfing around the inner basin was commenced in 1885, and is being continued at the present time. When finished it will afford splendid wharfing accommodation. The nature of the new work is sheet piling, strongly braced to anchor piles, and a platform 12 to 16 feet in width resting on walings.

The work of dredging has also been systematically carried out, and the depth of water is now 16 feet between the entrance piers and 12 feet on an average in the inner basin.

During the summer of 1888, and again in June, 1889, dredging was prosecuted in removing the sand which had accumulated between the piers at the entrance to the harbour, and in deepening the basin or harbour proper, the whole to a depth of 15 feet below low water in Lake Huron.

## KINGSTON.

Kingston is situated at the outlet of Lake Ontario, 172 miles west of Montreal.

At the close of the fiscal year ended 30th June, 1888, the work of removing Point Frederick shoal, which was commenced in 1883, was in progress, and was carried on until the 20th November, when it was closed for the winter months. It was resumed on the 7th May, 1889, and at the close of the fiscal year 3,890 cubic yards of rock were removed.

## KINGSTON—DRY DOCK.

In March, 1889, a contract was entered into for the construction of a dry dock at Kingston, on an admirable site in the centre of the harbour, which had been obtained on reasonable terms.

The dock will be built entirely of stone, and its principal dimensions are as follows:—

	Feet.
Length on the floor.....	280
Width " .....	40
Width at coping level .....	72
Depth from coping to floor.....	26
Depth of water on sill at low water.....	15½
Width of entrance.....	48

The entrance will be closed by an iron caisson, as at Quebec and Esquimalt, and centrifugal pumps will be employed to empty the dock.

Up to the close of the year merely a beginning had been made of the actual work, as much plant had to be obtained and placed on the ground.

#### KINGSVILLE.

Kingsville, Lake Erie, is in the electoral district of South Essex, is on the Detroit, Essex and Lake Erie Railway, and is distant 25 miles from the mouth of the Detroit River.

In July, 1883, a contract was entered into for the construction of a harbour of refuge at Kingsville. The old pier, 860 feet in length, was thoroughly repaired, and a second pier, 1,400 feet in length, 15, 20 and 30 feet in width, was constructed in such a position as to give the harbour a superficial area of 9 acres, the width at the entrance being 150 feet. A large portion of this harbour was dredged out to 12 feet depth at different times, and during the fiscal year 1888-89 a further quantity of dredging was done.

#### LITTLE NATION RIVER.

The Little or South Nation River flows through the counties of Grenville, Dundas, Stormont, Russell and Prescott, and empties into the Ottawa River at Wendover. Above the village of Casselman, in the County of Russell, the river is not navigable, but from that point to the village of Plantagenet, a distance of 36 miles, it is navigable, with the exception of a short distance, at the mouth of Moose Creek, which flows into the Nation River. There a rocky shoal is found, extending over a length of 700 feet, there being from 2 feet to 2 feet 6 inches of water over it. For the last three seasons work has been done towards the removal of this obstruction. The channel made is 60 feet in width, with a depth of 5 feet 6 inches at low water, which is sufficient for the small steamers using this river. Some 4,000 cubic yards of rock have been removed, besides a certain quantity of clay and alluvial deposit.

The villages which will benefit by the improvements made are Casselman, Lemieux, The Brook, Pendleton, Riceville, Fourniersville, Curran and Plantagenet, which are all on either shores of the river.

#### MEAFORD.

Meaford, an incorporated town in the County of Grey, is situated on the Georgian Bay, 18 miles west of Collingwood and 20 miles to the eastward of Owen Sound.

Prior to Confederation a pier 500 feet long, having 14 feet of water at its outer end, was built by the local authorities, aided by a grant from the Government. This pier, which is on the west side of the Big Head River, was extended 160 feet during 1874-75, and an arm 200 feet long was built in a north-easterly direction, in order to afford protection against north-east winds. A breakwater 410 feet long was also built on the east side of the river.

In 1878, and in 1880-81, the Department engaged in dredging to 12 feet inside the western pier, deepening the channel to the inner harbour, which had been partly dredged to 11 feet by the local authorities.

In 1883-84, 850 feet of sheet piling were built on the west side of both the inner and outer harbour and substantial repairs made to the west pier, these repairs being completed in 1885. In 1886 further dredging was done and in 1887-88 the town contributed \$3,000 and the Government \$5,000 to complete the dredging in the inner harbour to 13 feet, and to dredge a 100-foot channel 14 feet deep to it from the outside, which work was satisfactorily completed.

#### OAKVILLE.

Oakville, in the County of Halton, is on Lake Ontario, 22 miles west of Toronto and 18 miles east of Hamilton, and the harbour is formed at the mouth of Sixteen Mile Creek.

In November, 1886, a contract was entered into for rebuilding the outer 360 feet of the east pier which had been carried away by a storm. This contract was completed in October, 1887. At the same time the channel between the two piers was dredged to a depth of 12 feet at low water.

In 1888 the western pier was rebuilt from low water mark, these repairs being satisfactorily completed during the fiscal year 1888-89.

#### PENETANGUISHENE HARBOUR.

The harbour of Penetanguishene is situated on the north of the eastern peninsula in Georgian Bay, formed between Nottawassaga Bay and the waters of the Severn.

During the summer of 1880 dredging was done at the western point, south of Reformatory wharf, and to the north of the wharves at the village, to give a depth of 16 feet in the channel.

During 1888-89 a pile structure, 12 feet in width and 850 feet in length, was constructed in an average depth of 12 feet of water. Behind this structure an embankment 30 feet wide was formed with brush, stone and earth, giving to the wharf so completed a total width of 42 feet. In addition to this wharf a similar structure 350 feet in length was built up at the foot of Barrie street.

Penetanguishene is the terminus of one of the branches of the Grand Trunk Railway on Georgian Bay. A large quantity of lumber is shipped to that place from the north and east shores of the Georgian Bay for distribution throughout Ontario.

#### PORTAGE DU FORT BRIDGE.

In 1885-86-87, the Interprovincial Bridge which crosses the Ottawa River at Portage du Fort, about 60 miles above the City of Ottawa, was rebuilt. This bridge is 1,000 feet long. It consists of six piers and two abutments with a stone approach of 335 feet. The spans, one of 42 feet, four of 60 feet, one of 27 feet and one of 47 feet, and superstructure, are built of wood.

There is another bridge 315 feet in length crossing a branch of the Ottawa from the above mentioned island to the Quebec shore at the village of Portage du Fort, and during the fiscal year the superstructure was entirely rebuilt.

#### PORT ALBERT.

Port Albert, at the mouth of Nine Mile Creek, is situated on the eastern shore of Lake Huron, about 9 miles north of Goderich.

A small pier was first constructed by the local authorities, and in 1875 the Department built an addition thereto of 50 feet in length, and constructed a small breakwater of crib-work, 75 feet long, on the south side of the creek. In 1881 and 1882 a row of close piling, 300 feet in length, was driven from the eastern corner of the pier eastwardly, and the basin so formed dredged to a depth of 10 feet.

During the fiscal year 1882-83 the improvements were further continued, earth and clay being deposited behind the works on the northern side of the harbour and 90 feet of close-piling driven at the eastern end in addition to the construction of other work.

In 1884-85-86 and 1888-89 further repairs were made, and 300 feet of close sheet piling built on the eastern side of the north pier, to prevent earth from sliding into the harbour.

#### PORT ARTHUR.

Previous to 1870 Port Arthur was known as Prince Arthur's Landing, and so called by General Wolsely when the Imperial and Canadian troops were landed en route to suppress the first uprising in the North-West; and for many years it was the commencement of the combined land and water route over which emigrants and others seeking homes in the North-West had to be taken to reach their several des-

tinations; but with the formation of the Province of Manitoba, the construction of lines of railway from the United States system to Winnipeg, and the completion of the Canadian Pacific Railway, this route was abandoned, after having rendered good and useful service.

Port Arthur, at the head of Thunder Bay, situated as it is at the head of Canadian navigation on Lake Superior, has become a very important place, and the point—for the River Kaministiquia and the facilities for shipment which it affords is now incorporated as part of the harbour of Port Arthur under the customs regulations—through which all the products of the North-West must pass, either by land or by water; and for the purpose of protecting the wharves and the harbour proper, the construction of a length of 2,000 feet of the proposed breakwater was commenced in 1884 and carried successfully to completion in February, 1886.

In February, 1887, the construction of a further length of 1,600 feet, in addition to the work completed in the previous year, was commenced, and in November, 1888, it was finished; and a talus of stone was placed against the outside of the work, which has added to the strength of the structure, as has been proved during the many furious storms which have occurred since it was put in place.

In October, 1888, a contract was entered into for the construction of a further length of 1,500 feet of breakwater, with block piers at each end, to the westward of the work already completed, an opening of 350 feet in width being left between the old work and the new, to permit vessels to enter the port.

In May, 1889, operations on this new work were commenced, and up to the close of the fiscal year 300 feet had been constructed.

During the year a commencement was made to extend the talus of stone along the front of the work built under the first contract, it having been found that the bottom was eroding under the action of seas during heavy gales. It may here be mentioned that this breakwater has successfully withstood the force of breaking seas driven by gales travelling at the rate of 54 miles an hour, and also ice shoves from the outer bay, when the ice has been pushed completely over the structure and left remaining thereon to a height of 19 feet.

The depth at low water in the central opening is 18 feet; at the north-east opening, which is 250 feet wide between the end of the breakwater and the Canadian Pacific elevator wharf, the depth is 17 feet; and, after the completion of the length—1,500 feet—now under contract, there will be a depth of 17 feet at the western end, with ample room for steamers and vessels to pass.

The portions already completed have stood extremely well, and their presence has been the means of converting what was formerly an open, dangerous and exposed roadstead into a safe and commodious harbour, and when the works, now in course of construction, shall have been completed, the harbour of Port Arthur will not be excelled by any harbour on Lake Superior.

#### PORT ELGIN.

Port Elgin is in the County of Bruce and on the east coast of Lake Huron, 4 miles from Southampton and 24 miles from Kincardine.

In 1857 the Government granted \$4,000 to assist a private company in constructing a pier 380 feet in length to reach 13 feet of water.

During the summer of 1882 the construction of a breakwater 600 feet in length was commenced, and two groyne of close pile-work, with slopes of brush and stone, were built, with a view of preventing the washing in of sand into the harbour.

In November, 1884, a contract was entered into for the construction of 950 feet of crib-work to connect the northerly end of the breakwater with the shore, and the work was completed in 1886. A Government dredge was also engaged in removing a considerable quantity of sand.

In 1887-88 an addition of 300 feet in length and 20 feet in width was built perpendicularly to the original landing pier, and a large amount of dredging done to give better access thereto. In 1888-89 this dredging was continued on the bar at



the entrance, to enable vessels with a draft of 12 feet to approach it. A channel 760 feet in length, an average width of 75 feet and depth of 13 feet, was opened in line with the public wharf out to deep water.

#### PORT HOPE.

Port Hope lies on the north shore of Lake Ontario, 7 miles above Cobourg and 103 miles above Kingston.

The original harbour works consisted of two piers, the eastern extending 600 feet into the lake and the western 480 feet, the width at the entrance being 104 feet, the piers reaching to 13 feet at low water, with a depth of 9 feet only at the entrance to the harbour, which had an area of about 3 acres.

In 1875-76 the western pier was extended 150 feet on a width of 30 feet, and the eastern pier 120 feet, on a width of 40 feet, and the entrance dredged to 13 feet. During the summer of 1882 the work of extending the eastern pier 100 feet was commenced, and a considerable quantity of dredging was also done.

In 1882 a contract was entered into for the construction of a groyne 20 feet in width and 300 feet in length, and the work was completed in 1884, the object of this groyne being to prevent the sand from forming a bar at the mouth of the harbour, and this work was extended a further distance of 200 feet in 1884 and 1885.

During 1888-89, 700 feet of the superstructure of the railway wharf, which was decayed, was renewed, and the work is still in hand.

A large amount of dredging, 45,010 cubic yards, was done during the fiscal year in the old and new harbours to a depth of 10, 12 and 14 feet, and at the entrance to the harbour outside of the piers to a depth of 16 feet.

#### PORTSMOUTH.

Portsmouth is situated on Lake Ontario; 2 miles west from Kingston.

At the commencement of the fiscal year nearly 300 feet of new superstructure had been connected with the old work and about 200 feet was ready for floor timbers. At the close of the last fiscal year about 500 feet of the superstructure was finished, nearly 400 feet having been planked and 100 feet being ready for planking. The outer corners and the end have been protected with elm sheathing and walings. Elm fenders have also been placed for a considerable distance on both lake and harbour faces of the work.

#### THE RIDEAU—NORTH BRANCH.

Two dredges—the “St. Louis” and the “Queen”—with attendant stone lifter, were engaged during the fiscal year in deepening the channel of the north branch of the Rideau, from the Rideau Canal up to the village of Kemptville. The lower part of the channel was soft digging, and the “St. Louis” removed 8,160 cubic yards of sand, but as the river was ascended the character of the bottom changed to large-sized boulders, and beds of small boulders firmly packed. The “St. Louis” not proving strong enough for such heavy work, the “Queen” was placed in the channel, and with the assistance of dynamite progress was made with the work of obtaining a depth of 7 feet at low water in the channel.

#### RIVER AUX PUCE.

The River aux Puce flows through the County of Essex, and empties into Lake St. Clair, about 20 miles to the east of Windsor.

In September, 1888, a contract was entered into for the construction of 350 feet of close sheet-piling at the mouth of this river, 200 feet to be driven on the east side and 150 feet on the west side, to form a channel 40 feet in width, and at the close of the fiscal year the work was well under way.

#### RIVER KAMINISTIGUIA.

This river empties into Thunder Bay, Lake Superior, to the westward of Port Arthur.

In 1884 dredging was commenced on the shoal, off the mouth of the river, which prevented the large craft on the Upper Lakes from entering, a channel 3,700 feet in length being dredged on the line of the range lights.

In 1886 dredging was commenced in the river, and has been continued from year to year, so that the largest steamers can now reach the elevators at Fort William without difficulty.

#### RIVER OTTAWA.

##### *Improvement of Channel between Pembroke and Petewawa.*

Between Pembroke and the mouth of the Petewawa there existed several shoals which obstructed navigation.

In the fall of 1883 the work of removing the shoal at the Little Narrows, which are situated  $5\frac{1}{2}$  miles above Pembroke, was commenced, and completed in the summer of 1885. There are now 8 feet of water in the channel, which is 150 feet in width. In 1886 Crab Island, which greatly impeded navigation, was removed to 1 foot below low water.

In 1887 dredging on the shoals below the mouth of the Petewawa was commenced on the 1st August and continued till the 28th October, during which time 1,560 cubic yards of rock, boulders and gravel were removed, and 29 buoys placed in the channel.

The dredge was ordered to work in 1888 at a sand shoal which obstructed the channel from Lake des Allumettes to the Culbute Lock. The work was commenced on the 28th July and continued till 1st October 1888, during which time 2,044 cubic yards of sand and gravel were removed. This channel has now 8 feet of water and a width of 75 feet.

#### RONDEAU.

Rondeau is situated at Pointe aux Pins, on the north shore of Lake Erie, 104 miles above Port Colborne.

Pointe aux Pins projects into the lake, and encloses a natural basin of about 6000 acres in extent. The communication between the basin and the lake is over a sand bank 120 feet broad, some parts of which are above the level of the water. In 1844 a breakwater was built at Rondeau by the Government, and in 1851 the harbour was sold to the Rondeau Harbour Company for \$8,000, on condition that the works should be kept in an efficient state of repair; but this stipulation being wholly neglected, possession was resumed by the Government on 26th July, 1856, when the works were repaired.

In January, 1871, a contract was entered into for building the piers, enlarging the channel, deepening the basin, and other works required for a harbour of refuge; which works were carried to completion in four years. They consisted of two parallel piers, 783 feet in length, 250 feet apart, placed north and south, having a depth of 15 feet of water between them, a breakwater 225 feet in length, and dredging an area of 10 acres in the inner basin to a depth of 15 feet.

In 1877 an examination was made of the openings caused by several storms in the sand banks protecting the harbour, when it was found that although the depth of water in the channel had not decreased, the inner basin had been partially filled by sand carried in through the breaches in the beach.

In 1881 a contract was entered into for the construction of 2,000 feet of pile protection work on the beach to the westward of the entrance. This work was completed in 1883 and proved highly successful.

In 1883-84 a further amount of dredging was done to enlarge and deepen the basin immediately within the entrance from the lake, and extensive repairs were made to the eastern pier and breakwater in front of the lightkeeper's dwelling, and from time to time repairs to both the eastern and western piers have been made.

In 1888-89 the ends of both the pier entrances were rebuilt from water level, and a portion of the west pier was replanked.

## SAULT STE. MARIE.

Sault Ste. Marie, in Algoma County, is situated at the head of St. Mary's River which connects Lake Huron with Lake Superior.

In 1871 some dredging was done at the wharf, to permit steamers drawing 10 feet to reach it. In 1884-85 the work of dredging a shoal of sandstone rock, off the steamboat wharf, so as to give a depth of 16 feet was commenced, but it was decided to obviate the necessity of dredging the solid rock by extending the wharf 150 feet into the river, and a contract was entered into with that object in 1887. The work was successfully carried out and completed in June, 1889, the depth of water along the outside face of the wharf varying from 14 feet 6 inches to 18 feet.

## SOUTHAMPTON.

Southampton, in the electoral district of North Bruce, is situated at the mouth of Saugeen River, which empties into Lake Huron 143 miles above Sarnia.

The harbour is formed by the eastern breakwater of the Chantry Island harbour of refuge, and by a landing pier 850 in length and 30 feet in width, with a depth of water of 14 feet at the outer end. The last extension was built in 1884-85, but owing to great damage done to it by fire it had to be rebuilt from the water level in 1888-89, and this work was satisfactorily completed. Dredging was done in 1886-87 at the end of the landing pier, and also along the face of it to give a depth of 15 feet.

Dredging was done along the inner side of the wharf to a depth of 10 feet below low water in Lake Huron.

## SUMMERSTOWN.

Summerstown, County of Glengarry, is on the north side of Lake St. Francis, 10 miles below Cornwall.

A wharf having a length of 130 feet and a width of 20 feet, with a shore connection of 85 feet in length, was built at Summerstown in 1886-87.

This wharf has a height of 11 feet at the outer side, and since the channels from the main channel of the St. Lawrence have been deepened vessels and steamers drawing 7 feet of water can approach this wharf.

In the fall of 1888 a warehouse 24 feet by 30 feet was constructed, for the accommodation of the public.

## TORONTO HARBOUR.

The harbour of Toronto is formed inside of the island, and has its principal entrance from the westward.

In 1788 the harbour was described to be nearly two miles in length from the entrance on the west, to the isthmus between it and a large morass to the eastward. The breadth of the entrance was about half a mile, but the navigable channel for vessels was only 1,500 feet, having a depth of from 18 to 21 feet of water.

In 1832 Bouchette stated that the peninsula, now Toronto Island, was an extraordinary formation, being a narrow slip of land, in several places not more than 180 feet in breadth, but widening towards its western extremity to nearly a mile.

In 1833 changes in the state of the harbour were apparent, and the necessity for its preservation engaged the attention of those interested in its maintenance and improvement, who viewed with alarm the changes which had taken place in the peninsula, the encroachment of the shoal from Gibraltar Point northward and the narrowing of the entrance to the harbour. No action was taken, and in 1847 it was reported to the Department of Public Works that the entrance had narrowed to 250 feet, the bar having increased northwardly 280 feet in seven years.

In 1850 the harbour was put in commission, and early in 1852 it was reported that from the observations made and soundings taken during twenty years it was ascertained that the bar had advanced northwardly across the entrance at the rate of 19 feet yearly, and that the available width of the channel was scarcely 200 feet.

In 1853 an opening was made during a storm through the narrow beach at the eastern end of the harbour, and though it closed again in a short time afterwards, and attempts were made to give permanence to the beach, the whole was swept away, and the eastern entrance was formed, and in that year it was suggested that its improvement should be undertaken, for the purpose of saving time to vessels arriving from or departing to the eastward; and that there would be a tendency, by reason of the current created, to keep the harbour open later in the fall, and ensure an earlier opening in the spring.

In 1859 the harbour master reported that the harbour was bounded on the south by an island, with a navigable channel east and west of it; that in the eastern channel there was a depth of 8 feet at low water, and if properly buoyed might be navigated at night. In 1860 the western channel was dredged to a width of 400 feet, and an average depth of 12 feet. In 1862 the eastern entrance had increased to half a mile in width, and a bar had formed which had shoaled the water.

Between 1874 and 1880 the sum of \$49,120.90 had been expended, principally in increasing the width and depth of the western entrance, and a certain amount of blasting for the removal of solid rock was executed.

In 1881 an examination of the harbour was made by the late Mr. Jas. B. Eads, C.E., who submitted a carefully prepared report, in which he advised the closing of the eastern entrance, and the construction of works at the western entrance, to obtain and maintain a depth of 18 feet at low water; but before any action could be taken on these suggestions the marshes bounding the eastern side of the harbour, and the whole of the southern shore of the island, were damaged to such an extent as to necessitate a complete departure from the plans prepared by Mr. Eads, and attention had to be paid to the protection of the eastern side of the harbour, and the preservation of the eastern portion of the island, where it was the narrowest, and through which several breaches had been made. In 1882 work for the protection of the harbour, extending from the Don southwardly to Fisherman's Island, and for the protection of the island, over a length of 6,500 feet, were commenced, and were brought to completion in 1885.

In May, 1889, a contract was entered into for improving the eastern entrance, the works required consisting of the dredging a channel 300 feet in width to a depth of 12 feet below low water, the construction of protection works on either side of the new channel, and the continuation and completion of the harbour protection works on the eastern side of the proposed entrance—extending from Fisherman's Island westwardly to a junction with the channel works; and at the close of the year dredging was well under way.

## MANITOBA.

### THE RED RIVER.

The Red River empties into Lake Winnipeg 45 miles below the city of Winnipeg, and 21 miles below the town of West Selkirk, which is the place of transhipment in connection with the trade to and from Lake Winnipeg, and is called the head of navigation, though craft may ascend the river to the foot of St. Andrew's Rapids, which extend over a distance of 10 miles, are five in number, and have a total fall of 15 feet. In some of the rapids the water does not exceed 1 foot in depth, at extreme low water, and thus navigation is effectually obstructed between Selkirk and Winnipeg, except at high water, and even then the water must be higher than ordinary high water.

At a point 18 miles below Selkirk the river is divided into branches, known as the East, Centre and West, the latter having, in the interests of navigation, been adopted as the channel, and in it the dredging done by the Department during past years has been carried on, a passage having been made through the bar at its mouth, and also through the shoal at the "Forks," or where the river spreads and divides into the three channels referred to.

During the past summer the water was very low in the lake and river, and though boats had free access to the lake, yet the want of width in the channel was found to be a drawback in rough weather to the passage of steamers with barges in tow, and a width of at least 300 feet is required.

At present the fish and lumber industries are those which are being developed, and their growth during the past two years has been extensive, five saw mills being in operation at different points on the lake, with an annual output of—say, ten millions of feet of lumber—principally spruce; whilst three companies, with establishments fully equipped, with freezers, &c., are engaged in the fisheries at Selkirk and on Lake Winnipeg, and it is stated that their business is quite as important as that of lumber, and is being carried on in a most vigorous manner.

There are engaged in the lake trade in the carrying of lumber, fish, supplies, &c., twelve steam vessels, with barges, the gross tonnage of which amounts to 1,471 tons.

The dredging done by the Department in the river below Selkirk, and at its mouth in the lake has been a great feature in the development of trade, for without it, navigation would have been closed.

#### THE WHITE MUD.

The White Mud empties into Lake Manitoba at its southern end, about 9 miles north of Westbourne, in the County of Marquette, Manitoba. Westbourne is the point of transshipment to and from Lake Manitoba, on the Manitoba and North Western Railway which has a junction with the Canadian Pacific Railway at Portage la Prairie, 17 miles distant. From Westbourne to Winnipeg the distance is 73 miles.

During the fiscal year the channel was improved between Totogan and McArthur's Landing, and the bars which obstructed the navigation of the river were removed to such a width and depth as to permit the boats to pass freely, after which work was resumed on the bar at the mouth of the river.

During the winter necessary repairs were made to the plant, which on the opening of navigation, was placed to widen the channel between Totogan and McArthur's, after the completion of which work in the channel through the bar at the mouth was resumed, and was being proceeded with at the close of the fiscal year.

The trade on Lake Manitoba is principally in the movement of lumber, railway sleepers and cordwood, and but one steamer is engaged in such traffic, connection with the Hudson's Bay Company's forts and others, being carried on by sail boats.

Had not dredging been done at the mouth and in the river itself, navigation would have ceased, owing to the extreme lowness of the water which has prevailed during the past two years.

#### BRITISH COLUMBIA.

##### BIGG'S PORTAGE.

A small neck of land, known locally as Bigg's Portage, lying due west from Nanaimo, separates the Nanaimo flats from Northumberland Channel. For the purpose of facilitating the carrying of produce, etc., to Nanaimo, by the settlers living along the coast and on adjacent islands, a small channel was opened in 1887 through the Portage. During 1888-89 this channel was widened and deepened, thus increasing its usefulness.

##### THE COLUMBIA.

The portion of the Upper Columbia affected by the works executed during the past year lies south of the Canadian Pacific Railway, between the little town of Golden, near the mouth of the Kicking Horse, and the head of steamboat navigation in the Lower Columbia Lake, a distance of about 100 miles following the sinuosities of the river, which is navigable for stern-wheel steamers of light draught from the middle of May to the middle of September, but this period of navigation is not how-

ever continuous over the length of the river referred to, as much depends upon the snow fall, which if light compels the steamers to make their landing further down the river as the season advances.

The river varies in width from 60 to 150 feet; in the narrowest parts the water is deeper than where wider, where side channels and sloughs are formed.

At present there is but one steamer—owned by the Kootenay Mail Line plying on the river, which carries passengers, mails and supplies for the numerous mining camps and settlements along the Columbia and Kootenay valleys, consuming three days to reach the lake.

With the amount appropriated a channel has been scraped through the salmon beds just below the lower lake; stone and brush dams have been built across the ends of all side channels and sloughs working down stream; wing-dams have been constructed in the widest and shallowest parts and at bends, for the purpose of confining the water and causing scour, the total length of brush dams secured with rocks and piles amounting to 415 feet. Many snags and other obstructions were removed.

#### THE COQUITLAM.

The source of the Coquitlam is Coquitlam Lake, whence it flows southwardly and empties into the Fraser on its northern side, about 5 miles above New Westminster. The river is not navigable for any distance from its mouth, except for canoes being very rapid.

Owing to jams and accumulations of trees and drift-wood, the river overflowed, its banks and damaged the adjacent lands, and with the amount appropriated these jams and accumulations were removed with satisfactory results.

#### THE DRY DOCK—ESQUIMALT.

During the year the dry dock at Esquimalt has been fully occupied. Two of Her Majesty's ships, the "Cormorant" and the "Icarus," the U.S. lighthouse tender "Margarita," one ship, three barques, one schooner and ten steamers having been docked and repaired therein.

The electric lighting apparatus was completed, and proves to be a necessary and useful adjunct to the dock.

A lathe and drill for repairs have been set up, and a small centrifugal pump substituted for the auxiliary and drainage pump supplied with the pumping machinery, which was found to be both uncertain and unsatisfactory in its working.

Additional latrines have been built for the accommodation of the officers and crews of ships in dock, and proper houses for the fire-hose carts have been erected on each side of the dock.

Owing to galvanic action caused by the sea water, the lower ends of the pump rods were almost eaten or corroded away, and new rods, completely sheathed with brass and supplied with brass nuts, have been substituted.

The dock and premises are in excellent order and repair.

#### THE FRASER.

The sand banks at the mouth of the Fraser extend about 5 miles into the Straits of Georgia. According to the old admiralty charts two channels formerly existed through these banks, the course of one being nearly west, and the other leaving the first about 2 miles from the mouth of the river, passing to the south and thence west to the straits. In time the north channel filled, leaving the tortuous south channel the only entrance to the river. After a lapse of years it was found that a deepening of the north channel was taking place, and in 1886 works with the object of improving this channel were commenced, and have been steadily carried on.

The range of tide on the sand banks averages 12½ feet, whilst the range in the river at 2 miles from its mouth is about nine feet. The current across the banks at strong ebb runs from 2½ to 3 miles an hour, whilst during the periods of freshets it is increased to 5 miles per hour.

In the fall of 1886 a submerged dam, 2,000 feet in length, was commenced across the northern end of the south channel, for the purpose of closing it entirely, and as the work proceeded it was found that perceptible effects in deepening the north channel were being experienced. During 1887 a further length of 1,900 feet of dam was proceeded with, with the hope that the full course of the current would be deflected and pass through the north channel, but this was only partially realized, as the current showed an inclination to break away to the north of the middle ground.

During 1887 it was decided to place a dam on the north side of the north channel to meet the current going in that direction; to place four dams *in echelon* on the south side to deflect the current into the main channel, and to extend the south dam westwardly.

These works have been successful in obtaining the object desired, and the north channel has been both straightened and deepened, and has become the only entrance to the river, and it is anticipated that there will soon be a continuous depth of 19 feet at low water spring tides, through the banks.

This improvement in the direction and depth of the channel has been felt at New Westminster, as proved by the returns from the Custom house for the fiscal year ended 30th June, 1889, which show that 274 steamers and sailing vessels engaged in the coasting trade, aggregating 128,458 tons, entered, and 371 steamers and sailing vessels, aggregating 128,308 tons, departed during the year; whilst of sea-going vessels, ten arrived, with a total of 5,798 tons, and twelve departed, with a total of 6,974 tons, during the same period. In the previous year only four vessels entered seawards.

#### HARRISON RIVER.

Harrison River is the outlet of a large lake of the same name, which empties into the north side of the Fraser about 50 miles above New Westminster. On the south shore of the lake are hot sulphur springs, near which a large hotel has been erected and a town laid out, and a steamer plies to and fro between the springs and New Westminster.

The Canadian Pacific Railway crosses the river with a wooden bridge, 971 feet in length, with draw openings to admit the passage of vessels and craft into and out of the lake, but no provision was made for guiding such vessels through the draw, and for that purpose a number of piles have been driven in groups of 3 which have had the desired effect.

#### NICOL ROCK.

The harbour of Nanaimo is situated on the east coast of Vancouver Island, distant 73 miles from Victoria, by which it is connected by rail, and is important as the centre of the coal mining industry of the Province.

Three companies are at present in full operation, shipping coal from the port—the Vancouver Coal Company from their wharves in Nanaimo harbour proper, the Messrs. Dunsmuir & Sons, of the Wellington Colliery, from Departure Bay, 5 miles from Nanaimo, and the East Wellington Colliery, about midway between Nanaimo and Departure Bay.

Nicol Rock, lying about 450 feet north-west from the wharves of the Vancouver Coal Company, and about 120 feet east of their ballast wharf, was a source of danger to shipping, and a great impediment in the harbour, when the number and size of the vessels frequenting the harbour are taken into account, during the past year 419 steamers and 63 sailing vessels loading at the wharves of the Vancouver Coal Company, the shipments amounting to 248,070 tons.

The rock is composed of the grey sandstone which overlies the coal, and is much broken on top, and the strata have been found alternately hard and soft, thereby adding much to the difficulty of drilling and of breaking the rock up small enough for dredging.

The highest point was, originally, about 3 feet below low water mark, and 19 feet below high water, spring tides, which have a range of 16 feet. Operations

for the removal of the crown of this rock were commenced in November, 1887, and the first blast was exploded the 20th February following, since which time the work has been actively carried on. Up to the 30th June last about 4,110 lbs. of 75 per cent. dynamite have been used, and more than two-thirds of the area of the rock, with the 16 feet contour line, has been broken up, and 1,800 tons of material have been dredged and landed.

This work cannot be completed until 1891.

#### THE NICOMEKEL.

The Nicomekel lies to the southward of the Serpentine, and has its source in Township 11, and is a tidal stream, affording a convenient outlet for the produce from farms along its whole length.

For several years past the several amounts which were authorized were expended in the removal of snags and other obstructions to navigation up as far as the Clover Valley Road, and in opening a canal or "cut off" across the big bend in Section 36, Township 1. These improvements have proved to be of the greatest benefit to the settlers, by enabling small steamers and sloops to pass up the river to the above mentioned road.

During the past fiscal year a small amount was expended in the removal of snags and cutting brush along the banks, to the eastward of the Clover Valley Road, thus opening the river for small boats and scows nearly up to Langley Prairie, and for the completion of this work a further sum is required.

#### THE SERPENTINE.

The head waters of the Serpentine are situated in the north-west corner of Township 8, district of New Westminster, about three miles south of the Fraser; thence flowing south and south-west it empties in Mud Bay, in Township 1.

It is affected by the tide for some distance east of the coast meridian road, where it is not more than 20 feet in width. In consequence of its extremely tortuous course, the storm water has not time to get away with the ebb tide before the flood tide sets in, and the adjacent lands, especially in Townships 2 and 8, are for a great part of each year under water, and therefore unfit for cultivation. For the purposes of relief a ditch, 9 feet wide on the top, 3 feet wide on the bottom, and an average depth of 3 feet, was opened during 1887-88, from a point on the left bank of the river, in the N.E.  $\frac{1}{4}$  of Section 13, Township 2, to the S.W.  $\frac{1}{4}$  of Section 12, in the same township, a distance of about  $1\frac{1}{2}$  miles. During 1888-89 this ditch was enlarged to double its former capacity, and has proved of much benefit.

#### THE SOMAS.

This river rises in the northern part of what is known as the Alberni Valley, on the western side of Vancouver Island, and flows southwardly for a distance of about 20 miles through the valley, and empties into the Alberni Canal, an inlet of Barclay Sound, which is an arm of the Pacific Ocean.

The settlement on the Somas can be reached by water from Victoria *via* the Straits and Cape Beale, and by waggon road from Nanaimo, which leaves the east coast of the island near the mouth of Englishman's River, and strikes directly across country, climbing over the height of land, 1,100 feet above the sea. The distance from Victoria to Alberni by sea is about 140 miles, and by land 130 miles, 78 of which are covered by the Esquimalt and Nanaimo Railway.

During the past year 47 snags were removed from the channel of the river, and many overhanging trees were cut away between the mouth and the landing, which have increased the facilities for navigation; and the remains of an old mill dam near Sproat's Lake, which caused the adjoining lands to be overflowed, were removed.

#### VICTORIA HARBOUR.

The entrance to the harbour of Victoria is very narrow, with a sharp turn after passing the lighthouse. This turn was the cause of much difficulty to vessels, especially large steamers, entering the harbour during the prevalence of strong south-west winds, and was due to the existence of a shoal extending from Shoal Point,



which for a long time was supposed to be composed of solid rock, but in fact of a compact mass of boulders. It having been decided to operate on this shoal, iron pipes fitted with cast iron shoes were driven through and between the boulders with a small pile-driver to the required depth, and about 3 feet apart. These tubes were loaded with dynamite and exploded, after which a large harrow or rake, weighing about two tons, was dragged over the bottom, and then the dredge "Pacific" was able to work freely through the shoal.

The work done during the year has resulted in deepening and straightening the channel, and soon the "red" buoy marking the right side of the channel coming in will be shifted, when there will be a channel 300 feet in width, with an easy turn, and an almost straight course from the lighthouse to the wharves in front of the city, having a depth of not less than 14 feet at low water, spring tides, which have a range of 10 feet, there being at the entrance to the harbour a depth of 21 feet at high water neap tides, 23 feet at ordinary spring tides, and 24 feet at the extraordinary tides which occur in December.

### SURVEYS AND EXAMINATIONS.

During the year surveys and examinations were made at the undermentioned localities; and—with some exceptions—plans, reports and estimates have been submitted:—

Naufage,	King's Co.,	P. E. I.	Oyster Ground,	Gloucester Co.	N.B.
Tignish,	Prince Co.	do.	Nerepis River,	King's Co.	do.
Belle Creek,	Queen's Co.	do.	Washademoak,	Queen's Co.	do.
Dunn's Lake,	Antigonish Co.,	N. S.	Coles Point,	Westmorland Co.	do.
Georgeville	do	do	Pointe du Chêne,	do	do.
Monk's Island	do	do	Pré d'en haut,	do	do.
Belfry River,	Cape Breton Co.,	do	Longueuil,	Chambly Co.	P.Q.
Big Lorraine	do	do	Cap à l'Aigle,	Charlevoix Co.	do.
Cow Bay	do	do	Murray Bay	do	do.
East Bay	do	do	St. Fidèle	do	do.
Sydney, C. B.	do	do	Roberval & Métabetchouan,	Chicoutimi Co.	do.
Fox Harbour,	Cumberland Co.	do	Amherst, Magdalen Islands,	Gaspé Co.	do.
Joggin's	do	do	Cape Cove	do	do.
Munudie	do	do	St. Maxime de Mont Louis	do	do.
Port Greville	do	do	Ste. Anne des Monts	do	do.
Sand River	do	do	Rivière l'Assomption,	L'Assomption Co.	do.
Tignish	do	do	St. Laurent, Ile d'Orleans,	Montmorency Co.	do.
Two Rivers	do	do	Rivière des Beaudettes,	Nicolet Co.	do.
Barton,	Digby Co.	do	Gatineau,	Ottawa Co.	do.
Little River	do	do	Hull	do	do.
River Sissiboo	do	do	Pond Creek	do	do.
Roseway	do	do	Kippewa Lake,	Pontiac Co.	do.
Trout Cove	do	do	Cap Santé,	Portneuf Co.	do.
Musquodoboit,	Halifax Co.	do	Rimouski Pier	Rimouski Co.	do.
Three Fathom Harbor	do	do	Longue Pointe & Boucherville,	River St. Law.	do.
Summerville,	Hants Co.	do	Coteau Landing,	Soulanges Co.	do.
Canada Creek,	King's Co.	do	Pointe du Lac,	St. Maurice Co.	do.
Hall's Harbour	do	do	Rivière Meckinac	do	do.
Kingsport	do	do	do St. Maurice	do	do.
Morden	do	do	do du Nord,	Two Mountains Co.	do.
Oplvie	do	do	Pointe à Valois,	Vaudreuil Co.	do.
Pickett's Pier	do	do	Indian Point,	Algoma Co.	Ont.
Victoria	do	do	Thessalon,	do	do.
Lunenburg,	Lunenburg Co.	do	Kingsville,	Essex Co.	do.
Port Medway,	Queen's Co.	do	Texas Landing	do	do.
Barrington,	Shelburne Co.	do	Kingston Harbour,	Frontenac Co.	do.
Barrington Passage	do	do	Meaford,	Grey Co.	do.
Jones' Harbour	do	do	Thornbury	do	do.
Jordan Bay	do	do	Pictou,	Prince Edward Co.	do.
Green Harbour	do	do	Lake Scugog,	Victoria Co.	do.
Little Harbour	do	do	Des Chênes Bridge,	Ottawa River.	do.
Louis Head	do	do	Ottawa River	do	do.
Negro Island	do	do	West Selkirk,	Liagar,	Man.
Port la Tour	do	do	Kipp Bridge,	do	N.W.T.
Roseway Beach	do	do	Old Man's River Bridge	do	do.
Round Bay	do	do	Columbia River,	Kootenay,	B.C.
Big Bras d'Or, north side,	Victoria Co.	do	Burnaby Shoal,	New Westminster	do.
Coverdale,	Albert Co.	N.B.	New Westminster	do	do.
Two Rivers	do	do	Courtney, &c., Rivers,	Vancouver	do.

## DREDGING.

## THE "ST. LAWRENCE."

This dredge commenced work for the year on the 3rd July, 1888, at Little Glace Bay, C. B. This bay, situated between Table and McPherson's Heads, was formerly a cove, into which a small stream emptied, and owing to its location was utilized as a shipping point for the products of the collieries of the Little Glace Bay and Caledonia Coal Company. Sand flats and shallow water extend for a distance of  $\frac{3}{4}$  of a mile from the shore, and through them a narrow channel has been opened, to permit steamers and sailing vessels to reach the loading piers. This channel fills with sand and kelp, and to such an extent that the entry of vessels was to a certain extent stopped. For the removal of these obstructions dredging was commenced in 18 feet at low tide, about 180 fathoms from the end of the pier, and continued seawards for a length of 100 fathoms, with a width of 62 feet, and an average depth of 21 feet, and for a further length of 75 fathoms, with a width of 85 feet and a depth of 21 feet at low water; 15,213 cubic yards of sand, mud, clay, stone, boulders, kelp, logs and wreckage having been removed up to the 28th September.

As this channel is merely a cut in the bottom, without any protection against stones or scouring, it is only a question of time when it will again fill up and require re-dredging.

Neap tides rise  $2\frac{1}{4}$  feet and springs  $3\frac{3}{4}$  feet.

On the 13th October work was commenced in the River Restigouche, at the "Traverse," between Dalhousie and Campbellton, N.B., and continued until the 8th November, up to which date a cut 75 fathoms in length, 60 feet in width, had been made, to a depth of 15 feet at low water, and 4,900 cubic yards of hard, fine sand removed.

To open the channel required at this place to a depth of 15 feet at low water will require the services of this dredge for several seasons.

Neap tides rise 6 feet; springs, 9 feet.

A small amount of work was done in deepening between the wharves at Dalhousie for a winter berth for the Steamer "Admiral."

On the 18th November work was again taken up in deepening the approach to the market wharf, Pictou harbour, and continued until the 6th December, when the dredge was sent to winter quarters, having made a cut 180 fathoms in length, 60 feet in width, and 15 feet deep at low water, and removed 3,850 cubic yards of mud.

During the winter the dredge was overhauled and needed repairs made to the hull and machinery, and on the 27th April, 1889, work was commenced in the Middle River of Pictou, opposite Granton, in removing the point of a shoal that interfered with navigation. A cut 50 fathoms in length and 60 feet in width was made, to a depth of 22 feet at low water, and a second cut 60 fathoms long, and 40 feet wide, to a depth of 21 feet, thus widening, and straightening the channel very materially. The materials removed were mud and hard pan, and up to the 11th May, 3,675 cubic yards were removed.

On the 16th May, moorings were laid and work resumed on the berth for the "Admiral" at Dalhousie, N.B. The object of this work is to enable a steamer to ply later in the season, remain in safety at Dalhousie during the winter, and thus commence its trips earlier in the spring than heretofore.

This berth is 75 fathoms in length, running parallel with the shore, 60 feet in width, and 11 feet deep at low water; and 6,150 cubic yards of mud, clay, boulders, slabs, etc., were removed, and the work completed on the 8th June.

On the 12th June work was resumed on the Traverse, and up to the close of the year a cut 60 fathoms in length, 96 feet in width, had been completed to a depth of 13 feet, and a commencement made on a second cut also 60 fathoms in length,—6,150 cubic yards of sand having been removed.

The total quantity of material removed during the year amounted to 40,026 cubic yards, at an average cost of 39.09 cents per cubic yard.

The sum of \$39,41 was received from the sale of condemned stores, and \$375.00 from the Intercolonial Railway for dredging done at the railway wharf, Pictou harbour, N.S., both of which amounts were placed to the credit of the Receiver-General.

#### THE CANADA.

At the commencement of the fiscal year, the Canada was engaged at Yarmouth, N. S., in deepening the channel in the harbour near the Lobster rock, and in removing several projecting points from the tortuous and narrow channel, and new beacons formed of clusters of piles were driven to mark the position of the banks. The approach to the wharves in front of the town was much improved. Some dredging was performed at private wharves, for which payment was made.

Neap tides rise 13 feet, spring tides, 16 feet.

The material removed was principally clay and sand, and amounted to 20,092 cubic yards.

Work at Yarmouth closed at the end of October, and on the 31st the dredge arrived at Barrington and commenced the removal of two points in Sherrow's Channel, and in opening a basin off the end of the wharf in course of construction by the Department, 2,520 cubic yards of material having been removed up to 24th November.

Neap tides rise  $6\frac{1}{2}$  feet, springs  $8\frac{1}{2}$  feet.

The "Canada" wintered at St. John, N.B., and before the opening of navigation in the spring extensive and much needed repairs were made to the vessel, engines and machinery. On the 26th April, 1889, work was resumed in the channel at Barrington, N.S., and a further quantity of 9,225 cubic yards of clay and sand were removed up to the 30th June.

The total quantity removed by this dredge during the year was 31,837 cubic yards, at a cost of  $37\frac{1}{10}$  cents per cubic yard.

The sum of \$26.38 was received for private dredging, and deposited to the credit of the Receiver-General.

#### THE "NEW DOMINION."

During the past fiscal year this dredge operated as follows :—On the 1st July, 1888, it was engaged in improving the channel of the Kennebecasis below the village of Hampton, and a depth of 10 feet was obtained by the 2nd July, when the plant was removed down the river, and the channel approach to the draw opening in the highway bridge at Perry's Point was straightened and deepened to a depth of 10 feet.

On 13th July dredging was commenced on the Oromocto Shoals, River St. John and carried on until the 6th October, when a cut 2,350 feet in length, 50 feet wide, and 14 feet deep at low water, summer level, was finished,—30,310 cubic yards of sand having been removed.

The dredge returned to the channel at Perry's Point bridge on the 15th October and remained until 9th November, when the channel, 480 feet in length, 45 feet in width and 10 feet in depth, was completed, and a total of 11,340 cubic yards of sand and mud removed.

After necessary repairs had been executed, the dredge was placed to work for the corporation of the city of St. John in deepening and improving the berths for vessels at the Anchor Line wharf (so-called), in the harbour of St. John. Dredging commenced on the 8th May and was concluded on the 26th June, when a cut 200 feet in length and 80 feet in width was made alongside of the wharf. At 50 feet from the inner end rock was struck in 16 feet at low water, and 80 feet from the wharf at the outer edge of the cut, and 30 feet from the inner end of the wharf, the rock was struck at 12 feet. The depth of cutting averaged about  $6\frac{1}{2}$  feet, and 4,695 cubic yards of mud and silt were removed.

The total quantity of materials removed by this dredge was 46,345 cubic yards, at a cost of  $21\frac{23}{100}$  cents per cubic yard.

The sum of \$15 was received from the sale of condemned stores, and placed to the credit of the Receiver General.

#### THE "PRINCE EDWARD."

The whole of the summer of 1888 was spent in repairing this dredge and the attendant scows. The hull was found to be in a bad state, the deck and side planking being rotten, and after the removal of which the side keels, several of the timbers, beams, and anchor houses were broken, and so decayed that it was necessary to remove them. Two new keels and keelsons, and several new timbers and beams were put in and the hull new planked, the bottom with  $3\frac{1}{2}$ -inch hardwood, the sides with 6-inch southern hard pine, and the deck with 4-inch spruce. New deck combing's were inserted, and the deck house newly sheathed and the roof covered with canvas. The hull was caulked, covered with yellow metal up to the water line, and all wood work was painted. The engines, boiler, machinery and gearing were overhauled and repaired. Three scows were caulked, sheathed and repaired, and the dredge was launched on the 7th, and the scows on the 22nd and 27th November.

As winter had set in the plant was placed in winter quarters, and remained until 17th April, 1889, when it was taken to Red Point, on the East River, 7 miles above Charlottetown, where it was employed for 14 days in deepening in front of the wharf at that place to 12 feet at low water, and a satisfactory berth was completed in which vessels could lie and load at the wharf, 4,719 cubic yards of mud having been removed.

Between the 1st and 21st May the dredge was employed in deepening around and in front of the wharves of the Steam Navigation Company, in the harbour of Charlottetown, removing 7,668 cubic yards of mud. From around the Connolly's estate wharf, 5,343 cubic yards of mud were removed up to the 10th June; at Peake Bros & Co.'s wharf, 5,355 cubic yards of mud were dredged up to 24th June; and between the 24th and 30th June, the end of the fiscal year, 1,155 cubic yards of mud had been taken away from around the P. E. I. Railway wharf, the work being proceeded with during the present fiscal year.

The dredging at all the above-named wharves was with the view of obtaining a depth of 20 feet, where possible, to permit a larger class of vessel than heretofore to lie and load or discharge cargo.

The total quantity of materials removed by this dredge during the portion of the year it was employed amounted to 24,240 cubic yards, at an average cost of 63<sup>25</sup>/<sub>100</sub> cents per cubic yard.

The sum of \$1,525 was received for the dredging done at the wharves in Charlottetown harbour, and placed to the credit of the Receiver-General.

#### THE "GEORGE MC KENZIE."

On the 3rd July, 1888, the work of this dredge for the fiscal year, commenced at McNair's Cove, Antigonish County, N.S., in dredging a foundation for the reconstruction of a portion of the wharf at that place. Up to the 12th, 1,725 cubic yards of sand, gravel, stone and logs were removed, when, during a severe storm, the place being exposed, and shelter not to be obtained, the dredge sank at her moorings.

After much trouble the dredge was raised and taken to Port Hawkesbury, and placed on the Marine Railway, when it was found that extensive repairs were required to make good the damage which had been done.

These repairs took until 15th October to complete, when the plant was towed to Bayfield, Antigonish County, and commenced dredging around the wharf at that place, to enable the contractor to proceed with his work of close-piling. A berth for vessels was dredged at the end and sides of the wharf to 12 feet at low water; also a basin inside of the "L" or return at end of the wharf, the work being completed on the 31st October, up to which date 1,710 cubic yards of sand and gravel had been removed.

On the 1st November, 1888, the dredge arrived off Arisaig, Antigonish County, in a storm, for the purpose of deepening and preparing the foundation for the works in progress for extending and repairing the wharf at that place. Owing to the nature of the storm, the exposed and dangerous coast, and want of shelter, the plant had to be taken to Port Hawkesbury, the nearest point of safety, where it was placed in winter quarters.

Between the 10th and 30th June the work of preparing the foundations for the wharf at Arisaig was proceeded with, 900 cubic yards of sand, rock and old timber having been removed up to the latter date.

The total quantity removed during the year was 4,335 cubic yards, at a cost of \$2.57 per cubic yard.

The sum of \$4 was received from the sale of condemned stores, and placed to the credit of the Receiver General.

#### THE "CHALLENGE."

At the commencement of the fiscal year the "Challenge" was engaged at Kincardine, Ont., in removing the sand, which, brought in from Lake Huron during westerly blows, had accumulated between the piers forming the entrance to the harbour, and in deepening the basin, the whole to a depth of 15 feet below zero, or mean low water level in the lake, removing 6,480 cubic yards of sand.

On the 21st July the plant was towed to Southampton, and remained there until the 12th August in deepening alongside of the wharf at that place to a depth of 10 feet, removing 6,330 cubic yards of clay, hard-pan and boulders.

Dredging was commenced in the harbour of Port Elgin about the 14th August, and was continued until the 27th October, making a channel 760 feet in length and 75 feet in width, and an average depth of 13 feet, in line with the public wharf out to deep water, 19,260 cubic yards of sand and clay having been removed.

The plant was placed in winter quarters at Windsor, and during the spring received a complete overhauling and repair, the scows being strengthened to fit them for service until the completion of the new scows then under construction.

On the 9th May, 1889, operations were commenced at Goderich in opening a channel to a depth of 18½ feet below low lake level, through the shoal off the mouth of the harbour. Dredging was also done inside the harbour at the commercial wharf and along the south pier to a depth of 17 feet, the total amount of work done being 12,000 cubic yards of sand and gravel.

On the 27th June work was recommenced at Kincardine, at the outer end of the piers, for the purpose of removing the materials which had accumulated since the last visit of the dredge in July, 1888, and up to the end of the year 360 cubic yards of ordinary sand had been removed.

The total quantity removed during the year amounted to 44,430 cubic yards, at a cost of 19½ cents per cubic yard.

The dredge and machinery are in good condition. The hull of the tug is very much decayed, and provision will have to be made to provide a new one, into which the present boiler and machinery can be transferred.

#### THE "NIPISSING."

On the 2nd July, 1888, this dredge was working on the Presqu'Île, opposite Papineauville, in opening a cut through the peninsula from the main channel in the Ottawa into Pentecost Bay. This cut is 1,000 feet in length, 50 feet in width, except at the inner or bay end, where it was made 75 feet in width. A depth of 7 feet at low water in the Ottawa has been carried into the bay. Dredging to 7 feet depth was also done in front of and around the Papineauville wharf to permit the approach of steamers at the lower stages of water in the Ottawa.

This work occupied up to the 8th October, when 42,880 cubic yards of clay, mud, sand and boulders had been removed.

Operations commenced at Pointe aux Anglais on the 12th October, on the boulder shoals in front of the steamboat wharf, and a channel, 100 feet in width and a depth of 7 feet at low water, was opened eastwardly from the wharf to deep water, 2,595 cubic yards of boulders having been removed, the greater number of which were raised by the stone lifter after the dredge had loosened them.

During the winter a new hull was constructed, into which the boiler and machinery, which had been placed in thorough order, were transferred, and on the 24th June, 1889, the plant was towed to St. Placide, where operations were commenced to the westward and in front of the wharf at that place, to increase the area of the

basin and afford more room for the turning and accomodation of vessels. An old wharf which stood in the high water channel, and a serious obstruction to vessels, was removed; and, up to the close of the fiscal year, 270 cubic yards of clay were removed.

The total quantity of materials removed by this dredge during the year amounted to 45,745 cubic yards, at a cost of  $17\frac{1}{4}$  cents per cubic yard.

#### THE "ONTARIO."

At the close of the fiscal year 1887-88 the "Ontario" was operating at Brighton, Ont., in front of and to the eastward of the wharf at that place, and removed several sunken cribs in proximity to the wharf, which were the cause of difficulty and danger to vessels approaching or leaving the wharf. This work was prosecuted until the 3rd August, when a depth of 14 feet was left, and 10,680 cubic yards of mud, gravel and boulders were removed.

The plant was transferred to Port Hope, where operations commenced on the 6th August in the old harbour in cleaning through to the coal wharf to a depth of 10 feet, after which one cut was made in the new harbour to a depth of 14 feet, 5,880 cubic yards of ordinary sand having been removed.

Between the 27th August and 13th September dredging was done between the harbour piers at Newcastle, making a depth of 14 feet at low water in Lake Ontario from the warehouse basin out to deep water in the lake, which necessitated the removal of 4,230 cubic yards of sand and gravel.

On the 14th September the plant was taken to Port Hope, where it remained at work until the 27th October in deepening the entrance to the harbour outside of the piers to 16 feet, and inside the harbour to 14 feet, and 9,430 cubic yards of sand, gravel and mud were removed. Owing to the prevalence of heavy winds much time was lost, as the loaded scows could not be taken to a place of deposit in deep water in the lake.

The plant wintered at Port Hope and the ordinary repairs were made. On the 6th May, work was again resumed at Port Hope, and continued until the 30th June, 1889. The work comprised the deepening over portions of the old or inside harbour to a depth of 10 feet, one cut of 20 feet in width and 925 feet in length extending to the outer end of the Midland lumber wharf, and several shorter ones to complete the inner corner, where, owing to the presence of rock, the depth was limited to 10 feet. The angular corner opposite the harbor storehouse was dredged to a depth of 12 feet, the outer cut being 300 feet in length and 60 feet in width. A channel 450 feet in length and 14 feet in depth was made in the new harbour, extending inwards from the mouth of the piers, the materials removed consisting of sand, mud and gravel, amounting to 14,390 cubic yards, or a total of 29,700 cubic yards.

The total quantity of materials removed during the year amounted to 44,610 cubic yards, at a cost of  $13\frac{1}{2}$  cents per cubic yard.

This dredge is in fair condition, but having been afloat for five years it is possible that during the ensuing winter extensive repairs may be found to be necessary. The tug and scows are in good condition and repair.

#### THE "QUEEN."

At the commencement of the fiscal year this dredge was working on the shoals in the River Richelieu, off Gatiens' and Gendrons's wharves, at St. Antoine, and up to the 12th September a channel 275 feet in length, 60 feet wide and 7 feet in depth, at low water, was made through the upper shoal; and a cut 300 feet in length, 22 feet in width, was made through the lower shoal to a depth of 9 feet. At Gatiens' wharf a cut 545 feet long and 44 feet wide, and at Gendron's wharf a cut 100 feet long and 25 feet wide, were made, to a depth of 7 feet at low water, in the Richelieu, and 9,920 cubic yards of clay, clay and stone, and boulders were removed.

On the 21st September this dredge commenced work in deepening the north branch of the Rideau up to Kemptville, Ont., continuing until the setting in of winter, having only removed 851 cubic yards of materials, principally boulders, the work having proved to be exceedingly hard.

Work was resumed at Kemptville on the 6th June, 1889, and was being prosecuted at the close of the fiscal year, up to which time only 184 cubic yards of boulders were removed, and then only with the assistance of dynamite.

The total quantity of materials removed by this dredge during the year amounted to 10,955 cubic yards, at a cost of 66 $\frac{1}{4}$  cents per cubic yard.

#### THE "ST. LOUIS."

At the commencement of the year the "St. Louis" was working at Kemptville, deepening the channel of the north branch of the Rideau to 7 feet, having removed up to the 6th September, 8,160 cubic yards of sand.

On the 17th September this dredge commenced work at Lacolle, on the River Richelieu, in making a loading berth 250 feet long, 50 feet wide, and 8 feet deep at the outer and 7 feet deep at the inner end, alongside of the wharf at that place, removing 1,365 cubic yards of clay and stone, and 100 yards of hard-pan, which had to be broken up with dynamite.

During the winter extensive repairs were made, it having been found that the hard digging at Lacolle had strained the dredging machinery and loosened the fastenings.

On 22nd May, 1889, this dredge was sent to Charlemagne to remove a shoal at the junction of the River L'Assomption with the northern branch of the Ottawa, and to clear the obstructions which had gathered in the channel at that point. Dredging was done to 7 feet at low water in the St. Lawrence, and was in progress at the close of the fiscal year, up to which date 1,350 cubic yards of clay had been removed.

The total quantity of materials removed during the year amounted to 10,975 cubic yards, at a cost of 61 $\frac{3}{8}$  cents per cubic yard.

#### THE "OCTOPUS."

With a view of expeditiously and economically removing the deposits of sand and silt, which the Department is called upon to deal with, an experimental dredge was constructed, the principal machinery of which is a centrifugal pump, whereby the sand or other soft materials are pumped directly from the bottom and conveyed away by tubing. At the close of the year it was not sufficiently completed to admit of being put into actual service.

#### THE STONE LIFTERS.

Stone lifter No. 1 was literally rebuilt during the past winter, and was attached to the dredge "Queen," for the operations of which it rendered great service.

Stone lifter No. 2 was built during the past winter and attached to the dredge "Nipissing." It is a substantial and powerful vessel, and has been found very useful in handling boulders which the dredge could not raise.

#### THE "WINNIPEG."

This dredge commenced work on the 2nd July, 1888, in the channel at the mouth of the Red River, Manitoba, and remained until the 21st September, during which period it was widened in places and straightened on one side. Owing to the prevalence of high winds, preventing continuous working, the plant was removed to the "Forks," where another cut was made through the shoal, the better to facilitate navigation and to allow a larger volume of water to flow into the west branch. This work was completed at the end of October, when the dredge was placed in winter quarters at West Selkirk.

During the winter extensive repairs were made to the plant, principally on the steam tug and scows.

Early in May further dredging was commenced in front of the town of West Selkirk, north of Morris street, being a continuation of the work of the previous year, and the work was completed on the 10th June, when operations were again commenced at the mouth of the river, and were being carried on at the close of the fiscal year.

The total amount of materials moved by this dredge during the year was 67,720 cubic yards, at a cost of 19 $\frac{99}{100}$  cents per cubic yard.

#### THE "PRIESTMAN."

This dredge differs from all the others owned by the Department, consisting as it does of one of Priestman's—hence the name—patent buckets, similar to the clam shell, which is suspended from the end of a movable crane by a chain, and thus is capable of working either in deep or in shallow water, and it was selected for work on the White Mud, a tributary of Lake Manitoba, which is a comparatively shallow stream.

During the fiscal year this dredge worked in the White Mud in removing the bars between Totogan and McArthur's Landing, after which it was removed to the mouth of the river, where the channel was widened.

Repairs having been executed during the winter, work was commenced as soon as the ice had left the river in making another cut, thus widening the channel through the bars below Totogan, and that work was in progress at the close of the fiscal year.

The total amount of materials removed during the year amounted to 19,798 cubic yards, at a cost of 25 $\frac{48}{100}$  cents per yard.

#### THE "PACIFIC."

During the past fiscal year the dredge "Pacific" was employed as follows:—

From the 1st to 11th July, 1888, in clearing the entrance to the Graving Dock at Esquimalt. On the 12th operations were commenced in deepening and widening the channel off Shoal Point, at the entrance to Victoria harbour, and were continued without intermission until the 28th February, 1889. Between the 1st March and 1st April operations were carried on on the boulder shoal in Victoria harbour, when the plant was removed to New Westminster and placed to obtain a deep water berth abreast of the wharf of the Royal City Planing Mills Company, remaining there until the 7th May, when the plant returned to Victoria, and resumed work on the boulder shoal, where it remained until the 15th June, when it was laid up for necessary repairs.

The total amount of materials dredged during the year amounted to 28,759 cubic yards, which is about double the amount done last year, and may be accepted as a fair season's work, when the hard and compact nature of the material dredged is considered.

#### THE "SAMSON."

The snag-boat "Samson" was employed during the year in connection with the works in progress for improving the channel through the sand banks off the mouth of the Fraser; in attending to and placing buoys in the channel, under the charge of the officers of the Department of Marine and Fisheries; and in removing 153 snags and three large timber jams from the Fraser.

During the season effective repairs were made to the hull, boiler and machinery, and the vessel placed in good working order.

#### DREDGING PLANT.

The dredging plant belonging to the Department is as follows:—

##### *In the Maritime Provinces.*

The steam hopper dredge "St. Lawrence."

do do "Canada."

The dipper dredge "New Dominion" and 6 scows.

do do "Prince Edward" and 4 scows.

do do "Geo. McKenzie" 3 scows and one 1 water scow.

Also 5 old scows belonging to the lost dredge "Cape Breton."



*In Quebec.*

The dipper dredge "Queen," 2 scows, and tug "Sensation."  
do "Nipissing," 2 scows and tug "Ottawa."  
do "St. Louis," 2 scows, living scow, and tug "Davis."  
The sand dredge "Octopus."  
Stone lifters Nos. 1 and 2.

*Ship Channel, River St. Lawrence.*

Six elevator dredges, tugs "John Pratt," "St. James," "St. Francis," "St. Paul," "C. J. Brydges," "Minnie Parsons," "Delisle," three stone lifters, two coal barges, one stone ship, twelve dump scows of 80 yards capacity, five scows of 150 yards capacity, one sounding scow and two flat scows.

*In Ontario.*

The dipper dredge "Challenge," 2 scows, and tug "Trudeau."  
do "Ontario," 2 scows, and tug "Sir John."

*In Manitoba.*

Dredge "Winnipeg," tug "Sir Hector," and two scows and one coal barge.  
Dredge "Priestman," tug "Victoria," and two scows.

*In British Columbia.*

The elevator dredge "Pacific," scows and tug "Princess."  
The snag boat "Samson."

## DETAILS of Dredging in the Maritime Provinces

Dredge.	Locality.	County.	NEW BRUNSWICK.		
			Quantity.	Cost of each Work.	Total Cost.
			C. yds.	\$ cts.	\$ cts.
"New Dominion"	Kennebecasis River.....	King's.....	11,340	2,407 63	
	Oromocto Shoals .....	Sunbury.....	30,310	6,435 24	
	Anchor Line Wharf.....	St. John.....	4,695	996 81	9,839 68
"Canada".....	Yarmouth .....	Yarmouth .....			
	Barrington .....	Shelburne .....			
"Cape Breton".....					
"Prince Edward"	Red Point.....	Queen's .....			
	Steam Navigation Co.'s Wharf, Charlottetown .....	do .....			
	Connolly's Wharf, Charlottetown .....	do .....			
	Peake Bros. & Co. do .....	do .....			
	P. E. I. Ry. Wharf do .....	do .....			
"St. Lawrence"	Little Glace Bay.....	Cape Breton .....			
	Traverse .....	Restigouche .....	11,050	4,319 78	
	Dalhousie .....	do .....	6,238	2,438 62	6,758 40
	Pictou .....	Pictou .....			
	Granton .....	do .....			
"Geo. McKenzie"	McNair's Cove.....	Antigonish .....			
	Bayfield .....	do .....			
	Arisaig .....	do .....			
			63,633		16,598 08

Dredge.	NEW BRUNSWICK.		NOVA SCOTIA.	
	Quantity.	Cost.	Quantity.	Cost.
	C. yds.	\$ cts.	C. yds.	\$ cts.
"New Dominion".....	46,345	9,839 68		
"Canada".....			31,837	11,877 54
"Cape Breton".....				762 96
"Prince Edward".....				
"St. Lawrence".....	17,288	6,758 40	22,738	8,888 95
"Geo. McKenzie".....			4,335	11,167 53
	63,633	16,598 08	58,910	32,697 00

for the Year ending 30th June, 1889.

NOVA SCOTIA.			PRINCE EDWARD ISLAND.			Quantity by each Dredge.	Total Expenditure.
Quantity.	Cost of each Work.	Total Cost.	Quantity.	Cost of each Work.	Total Cost.		
C. yds.	\$ cts.	\$ cts.	C. yds.	\$ cts.	\$ cts.	C. yds.	\$ cts.
						46,345	9,839 68
20,092	7,495 79					31,837	11,877 54
11,745	4,381 75	11,877 54				Nil	762 98
		762 98					
			4,719	3,018 09			
			7,668	4,904 15			
			5,343	3,417 17			
			5,355	3,424 85			
			1,155	738 69	15,502 95	24,240	15,502 95
15,213	5,947 20						
3,850	1,505 08						
3,675	1,436 67	8,888 95				40,026	15,647 35
1,725	4,443 82						
1,710	4,405 19						
900	2,318 52	11,167 53				4,335	11,167 53
58,910		32,697 00	24,240		15,502 95	146,783	64,798 03

PRINCE EDWARD ISLAND.		Total Quantity.	Expenditure Dredging.	Superintend- ence.	Total Expenditure.	Cost per Cubic Yard.
Quantity.	Cost.					
C. yds.	\$ cts.	C. yds.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
		46,345	9,283 98	555 70	9,839 68	0 21 231
		31,837	11,206 75	670 79	11,877 54	0 37 305
		Nil.	719 91	43 07	762 98	
24,240	15,502 95	24,240	14,627 32	875 63	15,502 95	0 63 956
		40,026	14,763 66	883 69	15,647 35	0 39 093
		4,335	10,536 85	630 68	11,167 53	2 57 613
24,240	15,502 95	146,783	61,138 47	3,659 56	64,798 03	0 44 14

## DETAILS of Dredging in the Maritimes

Dredge.	Locality.	County.				
"New Dominion".	Kennebecasis River..... Oromocto Shoals..... Anchor Line Wharf.....	King's..... Sunbury..... St. John.....				
"Canada".....	Yarmouth..... Barrington.....	Yarmouth..... Shelburne.....				
"Cape Breton".....						
"Prince Edward".	Red Point..... Steam Navigation Co.'s Wharf..... Charlottetown..... Connolly's Wharf, Charlottetown..... Peake Bros. & Co. do..... P. E. I. Ry. Wharf.....					
"St. Lawrence".....	Little Glace Bay..... Traverse..... Dalhousie..... Pictou..... Granton.....			7,620	14,245	42,880 2,965
"Geo. McKenzie"	McNair's Cove..... Bayfield..... Arisaig.....		20,850	7,620	14,245	45,745

Total annual expenditure, \$7,825.72. Cost per cubic yard, 17½ cents.

## DREDGE "ONTARIO."

4,320	570				5,790	10,680
	3,530			18,230	7,940	29,700
	1,545			2,685		4,230
4,320	5,645			20,915	13,730	44,610

Total annual expenditure, \$6,059.42. Cost per cubic yard, 13½ cents.

## DREDGE "QUEEN."

256		6,016	3,648			9,920
805	230					1,035
1,061	230	6,016	3,648			10,955

Total annual expenditure, \$7,240. Cost per cubic yard, 66½ cents.

MENT, showing Material Removed at different localities, Total Annual  
on each Dredge and Average Cost per Cubic Yard.—*Concluded.*

DREDGE "ST. LOUIS."

.....	.....	.....	8,160	.....	8,160
.....	.....	1,365	.....	.....	1,465
.....	1,350	.....	.....	.....	1,350
.....	1,350	1,365	8,160	.....	10,975

re, \$6,736.32. Cost per cubic yard, 61 $\frac{1}{2}$  cents.



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APPENDIX No. 6.

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REPORT ON DEEPENING THE CHANNEL

BETWEEN

MONTREAL AND QUEBEC,

BY THE

MONTREAL HARBOUR COMMISSIONERS.

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## APPENDIX No. 6.

### REPORT OF THE MONTREAL HARBOUR COMMISSIONERS ON THE DEEPENING OF THE CHANNEL BETWEEN MONTREAL AND QUEBEC.

Ref. No. 100,885.

HARBOUR COMMISSIONERS OF MONTREAL,  
SECRETARY'S OFFICE,  
MONTREAL, 13th August, 1889.

SIR,—In compliance with the request contained in your letter of the 25th June, I am directed to transmit herewith a copy of the report made to the Harbour Commissioners of Montreal by their Chief Engineer upon the work of deepening the Ship Channel of the St. Lawrence between Montreal and Quebec during the first half of the last fiscal year, this work having been handed over to the Department of Public Works on the 31st December, 1888.

I have the honor to be, Sir,  
Your obedient servant,  
ALEXANDER ROBERTSON,  
*Secretary.*

A. GOBEIL, Esq.,  
Secretary, Department of Public Works,  
Ottawa.

HARBOUR COMMISSIONERS OF MONTREAL,  
CHIEF ENGINEER'S OFFICE,  
MONTREAL, 31st July, 1889.

SIR,—In compliance with the request of the Secretary of the Department of Public Works, I beg to submit the following report upon the work of deepening the Ship Channel between Montreal and Quebec for the first half of the last fiscal year, or from 1st July to 31st December, 1888, that being the part of the year during which the work was under the charge of the Harbour Commissioners of Montreal.

The work on hand was the deepening of the Ship Channel from 25 feet at low water to 27½ feet at low water. The object kept in immediate view was to bring the increased depth into use before the close of navigation last year. This was accomplished, and the Ship Channel was publicly inaugurated on the 7th November last. At the close of the season's work the condition of the Ship Channel was as follows:—

From Montreal to the head of Cap à la Roche Channel there was not less than 27½ feet throughout, at low water, with 10½ feet on the Flats of Lake St. Peter and at low water of tides, except at the Champlain Point bar, where a slight silting up had taken place.

Through the Cap à la Roche, Pouillier Rayer and Cap Charles Channels there was a depth, varying with the tides, between about 30 and 36 feet when the river is swollen in spring, and between 24 and 30 feet when it is at its lowest in the fall.

Below Cap Charles no dredging had ever been done. There are points where the depth is suspected to be less than 27½ feet at lowest water, and which need to be carefully examined, but in the mean time this depth is available by waiting for tides.

The breadth of the dredged channel is uniformly 300 feet, except between No. 1 Lightship and the White Buoy on Lake St. Peter, where it is 325 feet, at nearly all

bends where it is more or less enlarged up to a maximum width of 450 feet, and in Current St. Mary, where there remained some small points to be taken off to give the full breadth.

The chief details of the work done during the half year, and the cost of the same, are as follows :—

**CAP CHARLES.**

A dredge and stone-lifter were employed in parts of July and August, reducing a shoal and clearing away boulders from the upper end of the channel. Quantity dredged, 14,760 cubic yards, costing  $41\frac{1}{2}$  cents per yard ; boulders lifted by stone-lifter, 485 cubic yards, costing 63 cents per yard.

**POUILLIER RAYER.**

A stone-lifter was employed for a short time in the fall, at clearing boulders off detached places. Quantity lifted, 452 cubic yards, costing \$2.55 per yard.

**CAP À LA ROCHE.**

Work was in progress at the opening of the fiscal year, and was continued with from one to three dredges and one to two stone-lifters till 15th November, during which time there were removed 4,650 cubic yards of hard-pan and stones in detached shoals, costing 86 cents per yard ; 77,520 cubic yards shale rock, costing 37 cents per yard ; and 810 cubic yards large boulders, costing \$1.36 per yard.

**CAP LEVRAUT.**

Work was being carried on with a stone-lifter at the beginning of the fiscal year, and was continued till the whole was completed and tested to  $27\frac{1}{2}$  feet depth at low water. Boulders lifted, 1,430 cubic yards, costing \$1.14 per yard.

**CHAMPLAIN.**

Just above the bend and slightly to the north of the line of the Champlain Lights a small shoal of about 200 feet diameter, which greatly restricted the deep water space, was dredged off to  $27\frac{1}{2}$  feet at low water.

Quantity dredged, consisting of sand, clay and stones, 1,005 cubic yards, costing  $76\frac{1}{2}$  cents per yard.

**BECANCOUR.**

The dredging away of a small detached shoal on the lower traverse was in progress at the beginning of the fiscal year, and was continued to completion, giving  $27\frac{1}{2}$  feet at low water throughout.

Quantity dredged, consisting of hard-pan and stones, 1,485 cubic yards, costing 78 cents per yard.

**CAP MADELEINE.**

Several small detached shoals and points of main shoals, at and just below the bend, were dredged off to  $27\frac{1}{2}$  feet at low water.

Quantity, consisting of hard-pan, sand and stones, 1,335 cubic yards, costing 81 cents per yard.

**NICOLET.**

A small bar extending out from the main shoal on the south side was dredged through to  $27\frac{1}{2}$  feet at low water.

Quantity, consisting of hard pan and stones, 6,825 cubic yards, costing 35 cents per yard.

**LAKE ST. PETER.**

The deepening of some detached pieces between the White Buoy and No. 3 Lightship was in progress at the beginning of the fiscal year, and was continued till

they were finished, which also finished the whole dredging of Lake St. Peter to 27½ feet depth at low water.

Quantity dredged during the fiscal year, 359,880 cubic yards, soft clay, costing 2½ cents per yard, the lowest cost yet attained.

#### STONE ISLAND AND ILE DE GRACE.

Several portions of shoals were dredged off, so as to widen and straighten the natural channel and utilize it for the 27½ feet depth.

Quantity dredged, 73,365 cubic yards, costing 13 cents per yard.

#### CONTRECOEUR CHANNEL.

One dredge was employed for a short time in midsummer, and another in the fall, in reducing some detached shoals and dredging through some unfinished places below Ile St. Ours. Two small spots, found in testing the former work in the upper part of the channel and between that and Verchères, were also cleaned off. This completed the channel to 27½ feet depth at low water.

Quantity dredged, 15,065 cubic yards, costing 17 cents per yard.

#### VERCHÈRES TO POINT MARIE.

About a dozen small spots and points of shoals were dredged off, so as to widen and straighten the natural deep water and make it available for the 27½ foot channel.

Quantity dredged, 11,865 cubic yards, costing 24 cents per yard.

#### CAP ST. MICHEL.

Work was in progress at the opening of the fiscal year, and was continued to completion. Nearly all the channel passing Cap St. Michel and Ile de Laurier is curved, and was made 450 feet wide.

Quantity dredged, 114,200 cubic yards, costing 5½ cents per yard.

#### VARENNES.

This curve opposite Varennes has, as is well known, proved very difficult of navigation to deep draft steamers going downward. The radius of the curve was smaller than usual, and the current which sets to the north draws the steamers towards the bank of the channel and sometimes upon it. New lines, giving larger radius and greater breadth were laid out in 1887, and the dredging done both in that year and 1888 followed the new line for the north bank. This gives a maximum widening of 150 feet on that side, and at the worst place; and it has already afforded great relief to vessels navigating the curve.

A small piece of dredging was done last summer below the curve, a larger piece in the upper part of it and another in the Pouiller Varennes, after which the whole was tested to 27½ feet at low water.

Quantity dredged last fiscal year, 144,720 cubic yards, consisting of clay, with some stones, costing 4½ cents per yard.

#### ILE A L'AIGLE.

Opposite the lower end of the Island the point of a shoal was trimmed off to give more room in the natural channel.

Quantity dredged, consisting of clay and stones, 2,160 cubic yards, costing 18 cents per yard.

#### POINT AUX TREMBLES AND VICINITY.

On testing the channel at and below Point aux Trembles, a number of loose boulders and small spots were found in the work of former years at which there was slightly less than the standard depth. These were cleared off. A small piece of limestone rock at Point aux Trembles and nearly a mile of new work which remained at the upper end of the channel were also dredged through, after which the whole was tested.

Quantity dredged, 76,053 cubic yards, consisting of rock, stiff clay and stones, costing 24 cents per yard.

#### LONGUEUIL.

About half a mile in length of irregular cutting was done, chiefly between the bend and the head of the shoal, after which the work was tested to  $27\frac{1}{2}$  feet at low water. The material consists of very stiff clay and hard-pan, packed full of boulders, of boulders imbedded in gravel and boulders alone, some of them of great size.

Quantity, 16,881 cubic yards, costing 76 cents per yard.

#### CURRENT ST. MARY.

The current is so swift that ordinary soundings are of little value in ascertaining the exact condition of the bottom, and it was, therefore, carefully tested with the testing scow. A small bar extending across the channel, and some isolated spots and points of shoals, were found in this way, on which there was less than  $27\frac{1}{2}$  feet at low water. These consisted of clean boulders of all sizes, up to ten tons weight, and enough was done by a stone-lifter in removing them to afford a clear channel, but of rather less than full width. A few more yet require to be lifted to complete it.

Quantity lifted, 1,246 cubic yards, costing \$1.95 per yard.

The aggregate quantity of dredging done during the half year embraced in this report—that is, from 1st July to 31st December, 1888—was 926,292 cubic yards.

The floating plant employed consisted of six elevator dredges, three stone-lifters, nine screw-tugs, five barges, used as coal tenders and smiths' shops, eighteen hopper-bottomed scows and five flat deck scows.

Of the six elevator dredges, two are for working in earth, and have buckets of 16 and 28 cubic feet capacity; one is for rock or earth, and has buckets of 16 cubic feet capacity; another is for rock, and has buckets of 4 cubic feet capacity; and the remaining two are for rock, with buckets of  $6\frac{1}{2}$  cubic feet capacity.

In accordance with an Act passed last Session of Parliament, 51 Victoria, chapter 5, the deepening of the Ship Channel became one of the public works of the Dominion, and was virtually so treated after 22nd May last. The immediate management of the work, however, remained in the hands of the Harbour Commissioners till 31st December last, when the staff, working plant, ship yard and shops were entirely handed over to Government.

The official connection of the Harbour Commissioners with the Ship Channel works then ceased, after having continued over thirty-eight years, during which time the Commissioners have carried out all the successive deepenings of the channel, from the effective commencement of the work till the end of 1888.

Yours respectfully,

JOHN KENNEDY,  
*Chief Engineer.*

ALEXANDER ROBERTSON, Esq.,  
Secretary Harbour Commissioners,  
Montreal.

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APPENDIX No. 7.

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QUEBEC HARBOUR IMPROVEMENTS.

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REPORTS ON THE PRINCESS LOUISE EMBANKMENT AND DOCK WORKS,  
RIVER ST. CHARLES.

BY THE

QUEBEC HARBOUR COMMISSIONERS.

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## APPENDIX No. 7.

### QUEBEC HARBOUR IMPROVEMENTS—RIVER ST. CHARLES.

HARBOUR COMMISSIONERS' OFFICE,  
QUEBEC, 8th November, 1889.

SIR,—In compliance with request conveyed in your letter of the 25th June last, I have the honour to transmit you herewith the Chief Engineer's report on the harbour works for the last fiscal year.

I have the honour to be, Sir,  
Your most obedient servant,  
A. H. VERRET,  
*Secretary-Treasurer.*

A. GOBEL, Esq.,  
Secretary Public Works Department,  
Ottawa.

OTTAWA, 4th November, 1889.

SIR,—I have the honour to submit the following with reference to the works of the Commission under my charge at Quebec during the fiscal year ended 30th June, 1889.

#### HARBOUR WORKS.

At the close of the year the whole of the foundations of the Cross Wall had been completed and the masonry superstructure brought to coping level, having only a portion of the earth filling, the erection of the gearing for operating the valves in the regulating culverts, and the mechanism for operating the drawbridge, to be completed.

During the year steady progress, in the face of many difficulties, was made on the South Wall, and at the close of the year there was every prospect that that important work would be completed before the setting in of winter, thus permitting a test being made of the Wet Basin in the spring of 1890.

Dredging over the area of the Wet Basin was prosecuted during the year, and a depth of 15 feet at low water, spring tides, has been attained, except at the head of the basin, which, it is expected, will be operated on before the close of navigation.

A change was made in the railway tracks on the Louise Embankment, a new track having been laid along the northern face, and alterations made at the eastern end for the purpose of facilitating the shunting of cars and preventing the dead lock which took place at times. The foundation and building for a scale for weighing railway cars were being proceeded with at the close of the year.

The works generally are in a good state and condition.

I am, Sir,  
Your obedient servant,  
HENRY F. PERLEY,  
*Chief Engineer.*

A. H. VERRET, Esq.,  
Secretary-Treasurer Harbour Commission,  
Quebec.





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APPENDIX No. 8.

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REPORT

ON THE

SAGUENAY DISTRICT SLIDES AND BOOMS,

FOR THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1889.

BY

HENRY F. PERLEY, Chief Engineer,

AND

JOSEPH ROSA, Superintendent.

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## APPENDIX No. 8.

## SLIDE, BOOMS, &amp;c.—SAGUENAY DISTRICT.

Ref. No. 103,721.

CHIEF ENGINEER'S OFFICE,  
OTTAWA, 22nd November, 1889.

SIR,—I transmit herewith a report by Mr. Joseph Rosa, Assistant Engineer, on the Saguenay slide, for the fiscal year ended 30th June, 1889.

I have the honour to be, Sir,

Your obedient servant,

HENRY F. PERLEY,  
*Chief Engineer.*

A. GOBEIL, Esq.,  
Secretary Public Works Department,  
Ottawa.

QUEBEC, 5th November, 1889.

SIR,—I have to report that the following works have been executed on the dams and slide on the little discharge of Lake St. John, generally known as the Saguenay slide.

These works, which were commenced in 1856, were completed in 1860, and consist of seven dams, a glance pier, anchor pier, booms and a slide.

Dam No. 3 was re-built, and a large anchor pier, built in 1887-88, at the head of the slide, was lengthened 91 feet.

Repairs were made to 103 feet of the main boom and slidemaster's house.

The number of logs which passed through the slide during the year amounted to 48,876.

I have the honour to be, Sir,

Your obedient servant,

JOSEPH ROSA,  
*Superintendent*

HENRY F. PERLEY, Esq.,  
Chief Engineer, Public Works Department,  
Ottawa.



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APPENDIX No. 9.

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REPORT

ON THE

ST. MAURICE DISTRICT SLIDES AND BOOMS,

FOR THE FISCAL YEAR ENDED 30TH JUNE, 1889.

BY

HENRY F. PERLEY, Chief Engineer,

AND

CHARLES LAJOIE, Superintendent.

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## APPENDIX No. 9.

### SLIDES AND BOOMS—ST. MAURICE DISTRICT.

(Ref. No. 102429.)

CHIEF ENGINEER'S OFFICE,  
OTTAWA, 9th October, 1889.

SIR,—I transmit herewith a report by Mr. C. Lajoie, Superintendent of the St. Maurice District Slides and Booms, on the works under his charge, for the fiscal year ended 30th June, 1889.

I have the honour to be, Sir,  
Your obedient servant,

HENRY F. PERLEY,  
Chief Engineer.

A. GOBEL, Esq.,  
Secretary Public Works Department,  
Ottawa.

ST. MAURICE RIVER WORKS OFFICE,  
THREE RIVERS, 18th July, 1889.

SIR,—I have the honor to transmit you herewith my report on the St. Maurice River works under my superintendence, for the fiscal year ended 30th June last. Although the logs have not yet all arrived in the booms, the drive seems to be satisfactory.

The river having remained at a very high level, a large force of men had to be constantly employed, in order to prevent accidents, as much as possible.

The quantity of logs does not seem to exceed that of last year.

The amount voted for maintenance was .....	\$16,600 00
do do repairs was.....	5,000 00

The expenditure for maintenance was....	\$17,956 47
do do for repairs was .....	4,966 57

These repairs may be briefly described as follows, on the sheets hereto annexed.

I have the honour to be, Sir,

Your most humble servant,

CHARLES LAJOIE,  
Superintendent.

H. F. PERLEY, Esq.,  
Chief Engineer Department of Public Works,  
Ottawa.

The following is a brief description of the above-mentioned repairs:—

#### ENTRANCE OF THE ST. MAURICE.

1. Construction of a pier built in 1858, from the low water level, 25 feet long, 25 feet wide by 15 feet high; sheathing same with 3-inch deals.
2. Twenty-two cross-heads of booms replaced by transverse cross-chains 20 feet long, of  $\frac{7}{8}$ -in. iron, and other cross-heads added.
3. Two mooring posts planted on shore.
4. Sheathing with 3-inch deals one mooring pier on shore, of 20 by 12 by 15 feet.
5. Filling an undermined portion of a pier with 50 yards of stone and brush.

#### CAP CORNEILLE.

1. One thousand feet of booms, 6 feet wide, sheeted with 3-inch deals.
2. Demolition of a pier from low water level.

3. Construction of an incline on trestles, 200 feet long and 2 feet wide.
4. Seventy-five yards of stone and brush filling for protection of Government property.
5. Blasting 15 large boulders of about 3 cubic yards each.

## SHAWENEGAN.

1. Construction of mooring pier, 20 by 20 square feet, and 9 feet high, with a slope and two large pine posts.
2. Construction of a pier 42 feet long by 16 feet wide, and 26 feet high, to strengthen the damaged one on the north side of the slide.
3. Re-flooring the slide with 3-inch deals, on a length of 20 feet and a width of 13 feet.
4. Repairing the floor of slide-dam with 3-inch deals, for a length of 42 and a width of 10 feet.
5. Fixing 18 sheathing pieces on pier of Grand Remou at foot of falls.
6. Renewal of 1,170 feet of retaining boom, 5 feet wide, with 3-inch deals.
7. Replacing an old chock 10 feet long by 18 square inches, by a new one, on a retaining boom.
8. Extension of the pier for the station buildings for a length of 30 feet and a height of 8 feet; sheathing same with 2-inch deals.
9. Construction of a shed 45 feet long by 20 feet wide and 13 feet high.
10. Removal of the small shed nearer to the bank, in order to make room for the one above mentioned; covering same with shingles; clapboarding and flooring with 3-inch deals.
11. Repairs to house; doubling upper and lower floors; ceiling upper floor; making two bedrooms in upper story; fixing one dormer, two outside doors and 14 outside window sashes; papering the four rooms of the first story; painting and repairing all the openings; making a large cupboard in the kitchen; painting walls thereof, as well as those of upper story.
12. Whitewashing all the sheds and roofs of buildings at both stations.
13. Collecting 15 toise of stone, which can be used for ballasting pier at gate of retaining boom.

## GRANDE MÈRE.

1. Construction of a scow 40 feet long by 10 feet wide.
2. Repairs to house; glazing and painting 8 double windows; making a floor of 30 by 24 feet; one stairs.
3. Flooring shed with deals, 30 by 24 feet.

## GRANDES PILES.

1. Fixing 24 fenders, 12 feet long by 10 inches square, on piers; 3 face-timbers on piers, 25 feet long and 12 by 12 inches; 100  $\frac{1}{2}$ -inch iron bolts, 18 inches long; 20 1-inch iron bolts, 24 inches long.

2. Building a wooden stable, 12 by 12 feet.

Expenditure for maintenance and repairs during the fiscal year ended the 30th June, 1889 :—

Appropriation for maintenance .....	\$16,600 00	
Expenditure for do .....	17,956 47	
Over expenditure .....	<u>\$1,356 47</u>	\$1,356 47
Appropriation for repairs.....	\$5,000 00	
Expenditure for do .....	4,966 57	
	<u>\$ 33 43</u>	<u>33 43</u>
Over expenditure beyond appropriations.....		<u>\$1,323 04</u>

Dated at Three Rivers, this 18th July, 1889.



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APPENDIX No. 10.

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REPORT

ON THE

OTTAWA DISTRICT SLIDES AND BOOMS,

FOR THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1889.

BY

HENRY F. PERLEY, Chief Engineer,

AND

GEO. P. BROPHY, Superintending Engineer.

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## APPENDIX No. 10.

### SLIDES AND BOOMS—OTTAWA DISTRICT.

Ref. No. 102,431.

CHIEF ENGINEER'S OFFICE,  
OTTAWA, 9th October, 1889.

SIR,—I transmit herewith the annual report by Mr. G. P. Brophy, Superintending Engineer, on the works under his charge on the Ottawa River and its tributaries for the fiscal year ended 30th June, 1889.

I have the honour to be, Sir,  
Your obedient servant,  
HENRY F. PERLEY,  
*Chief Engineer.*

A. GOBEL, Esq.,  
Secretary Public Works Department.  
Ottawa

OTTAWA RIVER WORKS,  
OTTAWA, 19th July, 1889.

SIR,—In accordance with instructions from your Department, I have the honour to submit the following report on the works under my charge on the Ottawa River and its tributaries for the fiscal year ended 30th June, 1889.

During the summer months of 1888 the waters of the main river and the streams falling into it were somewhat low, although at a fair pitch for driving, but later in the season portions of the timber and sawlogs were stuck or abandoned for the time being, on account of the low stage of the water. As formerly reported, the clearances effected by lumbermen on berths in the Ottawa valley, that have been worked on for a number of years and the opening up of large tracts of country for settlement, have tended to an earlier breaking up of the ice and a more rapid melting of the snow in spring, and, as a consequence, the freshets bring the streams to flood height about the time of the opening of navigation, to be soon followed by a low water pitch, modified only to a limited extent by the reserve waters held in check by the lumbermen through the erection of reservoir dams on the upper reaches of the tributaries. The general result of this is that the works are exposed to immense pressure in the spring and that full advantage cannot be taken of the great volume of water to pass the timber, while later the shallowness of the streams renders the driving operations tedious and expensive, if not impracticable.

After the close of the season of 1888 such of the foundations of the works as required strengthening were repaired and had defects made good. The work under the heads of repairs, reconstruction and construction was carried out during the time covered by this report, as follows:—

#### REPAIRS ON THE MAIN OTTAWA RIVER.

##### *Ottawa or South Chaudière Station.*

The slide here had its bottom timbers, planking and aprons repaired and the station house and store house improved. The bridges between the cities of

of Ottawa and Hull were repaired, oak planking having been substituted for worn-out sheeting; the wing bridge leading to Victoria Island was widened and had its support pier renewed. A solid filling in of stone having been placed under the approach, it will make this a permanent improvement and reduce to a minimum the cost of its future maintenance; the roadway causeway and approaches were cleaned, levelled up with gravel and macadamized. The planking of the Sappers and Maria Street bridges over the canal was patched and the masonry of the Dufferin Bridge repaired and pointed. As regards the maintenance of the roadway or causeway between the Hull slide crossing and the Union Suspension Bridge, I may here remark that on account of the enormous traffic, involving the passage of very heavy loads on this busy thoroughfare, ordinary materials, such as macadamizing stone and gravel, laid here are soon pulverized, and tend to the formation of a coating of dust and mud. These constant renewals and cleanings have become very expensive, so much so that when the new bridge to replace the Suspension Bridge shall have been erected I would strongly recommend the laying of a more durable and serviceable pavement on the approaches, such as the roadway of granite blocks laid between the Suspension Bridge, at its southerly end, and the iron bridge across the Chaudière slide channel, which, after a severe test of two or three years' duration, seems to have given every satisfaction.

#### *North Chaudière or Hull Station.*

The slide at this place was repaired in its planking, bulkhead and guide booms, and casual defects remedied during the running season.

#### *Britannia.*

At Britannia, near the head of the Deschênes Rapids, the snubbing appliances for rafts and bands of timber, preparatory to running the rapids, having been damaged by ice shoves, a sunken or anchor pier, with float and buoy, was placed there to meet the requirements of the raftsmen, and has served a very good purpose.

#### *Chats Station.*

The curved pier near the head of the slide, where its timbers had become decayed, was thoroughly overhauled; a support pier in the basin, which had been displaced by moving ice was rebuilt; the guard pier in the basin had to be renewed and the main bulkhead reconstructed; the stiff guide boom near the slide entrance, where broken, had new timbers and plank covering inserted, and the bottom planking of the slide below the entrance, where it had been damaged or partially carried away, was replaced by elm sheeting.

#### *Chenaux Station.*

The extensive booms at this place were repaired and strengthened, and provision made for their greater security and more efficient working, by the placing of additional mooring piers, platforms and attachments.

#### *Portage du Fort Station.*

The work necessary to be done here embraced the repairing of the timbers and planking of two flat dams; the renewal of guide boom sections where dilapidated; the repairs of bulkhead; the re-topping of the side piers of slide, where the guard timbers had been carried off and the caulking and stanching of the slide bottom by planting narrow strips in the openings of the floor.

*Mountain Station.*

The bottom of the slide was repaired by placing tamarac planking in lieu of that worn out; the side piers were strengthened by laying new timbers, and new stop-logs provided, and the booms in their coverings and fastenings repaired.

*Calumet Station.*

The repair work at this place consisted of the making good of defects in the side piers and bulkheads; replacing stop-logs; patching the long and short slides; strengthening booms and facing by cribwork and stone; filling a portion of the river bank, as a safeguard against a washout by the action of high water. The works here require a general overhaul, and with this object in view a quantity of timber has been procured, which will be worked in after the present running season, as far as the means at my disposal will allow.

*Joachim Station.*

Repair works were executed here at the bulkhead, bridge and waste weir on south side of upper slide, guide pier near waste gate, old by-wash on north side of upper slide, what is known as the "O'Connor" dam and the boom at the lower slide. At the main slide the side piers were strengthened and the bottom planking renewed and the sills levelled up.

*Rocher Capitaine Station*

At the slide the timbers and sheeting were repaired and the stone filling of the piers made up where it had sagged. The dams in their timbers were strengthened, the sheeting repaired and stanchied, and snubbing piers provided above the upper slide entrance.

## REPAIRS OF WORKS ON TRIBUTARIES.

*Gatineau River.*

The main boom near the mouth of this stream had its piers and fastenings strengthened; the sorting gaps and division booms enlarged and improved; the guard piers at the canal faced and repaired in their stone filling; the creek and channels leading to the lower sorting gaps in the Ottawa River, where blocked with debris and mill rubbish, were cleaned and made passable. The timbers and sheeting of the bridge across the canal leading to the reserve pond were also repaired.

*Madawaska River.*

The dams, slides, piers and booms at Chain Rapids, Ragged Chute, High Falls, Bailey's Chute, Flat Rapids, Arnprior, and mouth of the stream and the side and wing dams between these stations, where the foundations and planking had been damaged by the action of high water, ice shoves or timber jams, were repaired and the boom mooring facilities in the Chats Lake increased. On this tributary large quantities of logs pass the works, in addition to square and sided timber, dimension stuff and ties, and as the drive from the upper reaches to the head of Calabogie Lake, about 30 miles from the mouth, is a mixed one, delays take place there to admit of sorting out the supplies for the local mills and for transportation by rail, and at the low water season logs may be found jammed and stranded for miles of the course of the river. On a sudden rising of the water these logs are again afloat, and in a swift current subject the river works to very great pressure, with corresponding tear and wear.

*Coulange River.*

The dams and booms above the principal chute on this stream were repaired. These works had been considerably damaged by the passing out of large fields of solid

ice in the spring of 1888. The planking of the long slide, where worn in places, was made good, and certain small repairs done to the booms and piers below High Falls and near the mouth of the river.

#### *Black River.*

At High Falls station, in the spring of 1888, the slide side piers and the main dam were strained and damaged by high water, and it was possible to carry out temporary repairs only to admit of the passage of the timber, &c., of that year. During the winter months much has been done to strengthen the slide in its superstructure and foundations, and to put the dam at the head of the chute, which supplies water to the slide, in a state of efficiency. The retaining and guide booms above the slide, with their piers and attachments, were also repaired.

#### *Petewawa River.*

On this tributary there is an extensive series of improvements, extending from the outlet of Cedar Lake to the mouth, and consisting of retaining and side dams, piers, booms and single-stick slides. Many of these works have been in use for a period of from twenty to thirty years, and although they have from time to time been repaired, the necessity for the reconstruction of a large portion of them has become urgent. During the winter and spring months the foundations of the dams and slides were blocked up, the slide planking partially renewed, the dams stanchied, and the waste gate at the second chute dam repaired, while at the mouth of the river the retaining booms and support piers were strengthened.

#### *Dumoine River.*

The foundations of the long slide having partially given away, it became necessary to insert crib-work, filled with stone, to support the slide proper, as also to block and level up the superstructure. The dam at Ryan's chute and some of the wing dams which had sustained damage at the time of high water and from the passing of logs had their timbers and sheeting repaired.

The work done under the head of reconstruction consisted of the rebuilding of portions of the Calumet slide piers and the restoration of the dam at Ragged Chute, on the Coulonge River, while the construction work covered the building of the new wharf at the foot of the Long Sault, on the line of traffic to the Lake Temiscamingue lumbering and colonization district, and also the booms and support piers placed near the head of the Calabogie Lake, an expansion of the Madawaska River. These last improvements were designed to facilitate the sorting of logs and other descriptions of timber that the owner might desire to separate from the general drive on the stream, and thus enable them to manufacture or otherwise dispose of the raw material on the lake shore or at the outlet near the railway crossing.

The spring of 1889, on the southern tributaries in the Ottawa valley, was what may be considered an early one, and snow rapidly disappeared before the lumbermen had fairly completed the drawing of their timber, &c., to the banks of the streams.

The creeks attained no great height, when they should have been in full flood, and it was at one time thought that the bulk of the drives would be stuck, but continuous rainfalls later on, together with an ample flow of the north waters, had the effect of swelling the Ottawa and its tributary rivers to such a favorable pitch for driving during the months of May and June that timber of every description moved freely, and there is every prospect of a comparatively clean sweep this season.

The following statement, compiled from the records in possession of the collector of slide dues in this city, shows the volume of business done at the works in passing the various descriptions of timber, together with the amount of revenue accrued as tolls for the fiscal year covered by this report:—

	Pieces.
White pine.....	42,420
Red ".....	14,809
Boom and dimension .....	26,199
Cedars.....	32,898
Tamarac.....	2,932
Elm.....	2
Ash.....	140
Spruce.....	226
Telegraph poles.....	1,468
Birch.....	41
Basswood.....	8
Oak.....	1
54,232 railway ties, equal to 6,779 pieces flat timber.....	6,779

Total pieces of timber.....	127,923
And pieces of sawlogs .....	3,725,386

The revenue accrued on the above was \$84,709.39.

In respectfully submitting the above,

I have the honour to be, Sir,

Your obedient servant,

GEO. P. BROPHY,

*Superintending Engineer,*

*Ottawa River Works.*

HENRY F. PERLEY, Esq.,  
Chief Engineer Public Works Department,  
Ottawa.





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APPENDIX No. 11.

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REPORT

ON THE

NEWCASTLE DISTRICT SLIDES AND BOOMS,

BY

HENRY F. PERLEY, Chief Engineer,

AND

R. B. ROGERS, Superintending Engineer

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## APPENDIX No. 11.

### SLIDES AND BOOMS—NEWCASTLE DISTRICT.

Ref. No. 102,430.

DEPARTMENT PUBLIC WORKS,  
CHIEF ENGINEER'S OFFICE,  
OTTAWA, 9th October, 1889.

SIR,—I transmit herewith a report by Mr. R. B. Rogers, Superintending Engineer River Trent and Newcastle District Works, on the works under his charge for the fiscal year ended 30th June, 1889.

I have the honour to be, Sir,  
Your obedient servant,  
HENRY F. PERLEY,  
*Chief Engineer.*

A. GOBEL, Esq.,  
Secretary Public Works Department.

ENGINEER'S OFFICE,  
PETERBOROUGH, 29th July, 1889.

SIR,—I have the honour to submit the following report on the works under my charge in connection with the Department of Public Works for the fiscal year ending 30th June, 1889.

The works on the River Trent, and the waters of what was formerly known as the "Newcastle District," are divided into two classes, those erected exclusively for the improvement of navigation and those erected to facilitate the descent of timber. The former are under the control of the Department of Railways and Canals; the latter are under the control of the Department of Public Works. Those under the Department of Public Works consist of dams, slides, booms and all such works as are necessary to facilitate the descent of timber.

The water last season stood at the average height. This spring the water was very low, and fears were entertained that there would be a great scarcity before the season was over. Care was therefore taken during the month of May to save as much water as possible in the reservoirs, but during the latter part of May and the early part of June heavy falls of rain filled the reservoirs up to high spring water mark. This was a great boon to many lumbermen, who had concluded to "lay up" their drives for want of water to drive.

The works of repair executed at the different stations are as follows:—

#### *Scugog River.*

The river was cleared of snags. Lights were kept on the two beacons at the mouth of the river, which have been a great benefit to navigation.

#### *Bobcaygeon.*

A pier and boom were constructed at the entrance of "Big Bob" channel to prevent "bags" of logs from drifting into the navigation channel.

*Fenelon Falls.*

On account of the swing not being placed in the railroad bridge above the lock, navigation could not be opened at this station. There was, therefore, no immediate necessity for the piers and booms that were to be constructed to protect navigation in the river. Part of this appropriation was therefore used for the construction of piers and booms at Buckhorn, where they were urgently needed.

*Buckhorn.*

Four piers were constructed here, to prevent the logs on approaching the slide from stopping navigation to the canal.

*Young's Point.*

A glance pier below the slide was built to prevent the logs from passing into the navigation channel on the west side.

*Otonabee River.*

Some work was done in removing boulders from the shoal known as "Yankee Bonnet."

*Trent River.*

The work of removing boulders from the navigation channel at "Hincks' Bar" was proceeded with.

I have the honour to be, Sir,

Your obedient servant,

RICHARD B. ROGERS,

*Superintending Engineer.*

H. F. PERLEY, Esq.,  
Chief Engineer, Public Works Department,  
Ottawa.

STATEMENT showing the total quantity of Sawlogs, Boom Timber, Cedar &c., which passed through the different slides on the Trent and "Newcastle District" waters, for the fiscal year ended 30th June, 1889.

Station.	Saw Logs.	Boom Timber.	Cedar 16 ft.	Square Timber.	Railway Ties.	Telegraph Poles.
Fenelon Falls.....	250,700	3,975				
Bobcaygeon.....	137,200	3,170				
Buckhorn.....	137,200	3,170				
Burleigh.....	177,200	3,970				
Young's Point.....	275,945	4,721	53,223		20,091	
Lakefield.....	157,218	2,813	53,223		20,091	
Whitlaw's Rapids.....	121,006	1,933	53,223		20,091	
Hastings.....	121,006	1,933	53,223		20,091	
Heely's Falls.....	168,449	2,808	53,223		20,091	
Middle Falls.....	400,377	11,159	103,223	336	70,091	5,000
Chisholm's Rapids.....	400,377	11,159	103,223	336	70,091	5,000

RICHARD B. ROGERS,  
*Superintending Engineer.*

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APPENDIX No. 12.

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STATEMENT OF STAFF EMPLOYED  
ON THE  
SLIDES AND BOOMS  
THROUGHOUT THE DOMINION.

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## APPENDIX No. 12.

Ref. No. 103,120.

STATEMENT showing Names, Dates of Appointment, Salaries, &amp;c., of persons employed on the different Slides and Booms, &amp;c., on 30th June, 1889.

Name.	Date of Birth.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
<i>Saguenay District.</i>						
Arthur Boulanger	Sep. 11, 1854	Superintendent.	Saguenay	May 19, 1881	475 00 p. ann.	<i>Saguenay Works.</i> In addition to the Superintendent, there are employed on the Saguenay works 4 flagmen, at 70c. per day each during the passing of the logs through the slides, which lasts one or two months.
Calixte Fortin		Asst. Superintendent	do	do 13, 1881	30 00 p. m th.	
<i>St. Maurice District.</i>						
Charles Lajoie	Dec. 28, 1824	Superintendent.	Three Rivers.	Oct. 7, 1878	1,200 00 p. ann.	<i>St. Maurice Works.</i> Every year during the timber running season, the officers in charge of the various stations employ 25 to 30 men during 3 or 4 months at the rate of 80c. to \$1.10 per working day, inclusive of 40 or 50 cents per day per man, paid for board to the Deputy Slide Masters and Boom Keepers; also one clerk and foreman, at \$1 per day, two watchmen and one gate-keeper.
J. B. Normand	1837	Asst. Superintendent	Mouth of St. Maurice	April 12, 1868	3 00 per day.	
N. Dagneau		Paymaster	Three Rivers.	Aug. 1, 1886	50 00 p. m th.	
Cyrilac Lymburner	1833	Foreman	Cap aux Cornelles.	April 25, 1881	565 00 p. ann.	
Jos. Page	July 7, 1845	Boom Keeper	do	Dec. 10, 1879	469 50 do	
Arthur Rouseau	do 30, 1831	Slide Master.	Shawenegan.	April 12, 1858	3 00 per day.	
Louis St-Onge		Asst. Slide Master.	do	July 24, 1885	365 00 p. ann.	
Charles Langlois	1840	Foreman	do	Jan. 13, 1880	535 00 do	
Theophile Larue	Sept. 3, 1827	Boom Keeper	Grand Mère.	Mar. 16, 1872	2 00 per day.	
Fra. Lacroix	1833	Asst. Boom Keeper.	do	April 1, 1886	469 50 p. ann.	
Arthur Pellerin		Boom Keeper	Les Grés.	Aug. 5, 1885	365 00 do	
<i>Richelieu District.</i>						
Azarie Bienvenue.		Boom Master.	Belœil Station	June 1, 1882	100 00 do	
<i>Ottawa District.</i>						
G. P. Brophy	Feb. 24, 1846	Superintendent.	Ottawa.	July 6, 1873	2,500 00 do	<i>Ottawa River Works.</i> In addition to the above officers, &c., there are employed during the running season, one foreman on slide at \$1.50 and one assistant foreman at \$1.25 per day;
D. Scott	do 15, 1830	Accountant.	do	Oct. 1, 1854	1,500 00 do	
J. C. Scott.	June, 1865	Measurer & Timekpr.	do	April 1, 1869	2 00 per day.	
Wm. Kane.	Dec. 24, 1820	Messenger.	do	Aug. 1, 1867	1 25 do	

Moses Aubry	July 15, 1825	Foreman Carpenter.	do		800 00 p. ann.	also 25 to 30 laborers, at from \$1 to \$1.40 per working day.
Pierre St-Pierre	Mar. 13, 1853	Deputy Slide Master.	Carillon	April 21, 1885	1 25 per day.	Employed about 7 months during season of navigation.
D. Noonan	June 17, 1840	Boom Master.	Gatineau	May 21, 1878	500 00 p. ann.	Employed about 7 months during season of navigation, oversees repairs in winter.
W. J. Macdonald	Feb. 17, 1835	Deputy Slide Master.	Chaudière	April 25, 1876	635 00 do	Employed about 7 months during season of navigation, oversees repairs in winter.
J. Soulière	Nov. 8, 1829	do	do	1868	2 00 per day.	Employed about 6 months during season of navigation.
J. McDouall	do 1, 1818	do	Hull	Mar. 1, 1877	1 25 do	Employed about 6 months during season of navigation, oversees repairs in winter.
D. McFarlane	Feb. 25, 1836	do	Chats	do 27, 1860	480 00 p. ann.	Employed about 3 months during season of navigation.
John Harvey	May 22, 1831	Slide Master.	Arm-prior	July 12, 1882	2 50 per day.	Employed about 5 months during season of navigation, oversees repairs in winter.
Jas. McCrea	Mar. 26, 1859	Boom do	Springtown	May 15, 1880	300 00 p. ann.	Employed about 5 months during season of navigation.
Patrick Barry	do 27, 1858	Slide do	High Falls	Mar. 10, 1888	300 00 do	Employed about 5 months during season of navigation.
Duncan McLaren	Jan. 7, 1860	Deputy Slide Master.	Portage du Fort	Sept. 7, 1881	456 25 do	Employed about 5 months during season of navigation, oversees repairs in winter.
J. G. Poupore	Feb. 27, 1857	do	Black River	Oct. 15, 1880	480 00 do	Employed about 5 months during season of navigation.
Jas. Steen Rowan	Aug. 27, 1836	do	Lower Petewawa	Mar. 18, 1887	300 00 do	Employed about 5 months during season of navigation.
Wm. Thompson	May 8, 1843	do	Mountain	Oct. 10, 1879	1 25 per day.	Employed about 6 months during season of navigation, oversees repairs in winter.
D. Carmichael	Sept. 26, 1813	do	Calumet	August, 1848	40 00 p. m'th.	Employed about 7 months during season of navigation, oversees repairs in winter.
A. Proudfoot	July 17, 1822	do	Coulonge	April 1, 1865	1 00 per day.	Employed about 4 months during season of navigation, oversees repairs in winter.
H. Corley	Mar. 20, 1820	do	Upper Petewawa	1870	1 75 do	Employed about 4 months during season of navigation.
J. Lafrance		do	do	April 15, 1886	2 00 do	Employed about 4 months during season of navigation, oversees repairs in winter.
A. McDougall	July 20, 1814	do	Joschims	Nov. 6, 1871	300 00 p. ann.	Employed during timber season.
Jos. Dufault	Jan. 15, 1840	Boom Master.	Dumoine	April 24, 1882	1 50 per day.	Employed during season of navigation, 3 m'ths. Will inspect works if required.
Hugh Grant	Mar. 25, 1829	Deputy Slide Master.	do	do 12, 1872	300 00 p. ann.	Employed during season of navigation, 3 m'ths. Will inspect works if required.
A. McEwen	Aug. 20, 1820	do	Rocher Capitaine	May 1, 1874	480 00 do	Employed during season of navigation, 3 m'ths. Will inspect works if required.
A. H. Johnson	Nov. 28, 1839	do	Cheneaux	1865	2 50 per day.	Paid during season of navigation about 7 m'ths. Attends to repairs in winter.
G. T. Johnson	Sept. 10, 1841	do	do	1872	1 75 do	Paid during season of navigation, about 7 m'ths. Attends to repairs in winter.
<i>Newcastle District.</i>						
R. B. Rogers	Jan. 17, 1857	Superintendent.	Peterboro'	July 1, 1884	600 00 p. ann.	Receives also \$600 per annum from Department of Railways and Canals.

APPENDIX 12.—STATEMENT showing the Names, &c., of persons employed on the different Slides and Booms—*Concluded.*

Name.	Date of Birth.	Position.	Where Employed.	Date of Appointment.	Salary.	Remarks.
<i>Newcastle District—Con.</i>						
G. H. Giroux.....		Clerk-Supt's. Office.....	Peterboro'.....	July 1, 1882	\$ cts. 300 00 p. ann..	Receives also \$300 per annum from Department of Railways and Canals.
Robert Armstrong.....		Slide Master.....	Chisholm Rapids.....	April 1, 1883	200 00 do ..	
John Ingram.....		do .....	Fenelon Falls.....	do 1, 1883	200 00 do ..	
W. H. Hall.....		do .....	Buckhorn.....	May 1, 1879	100 00 do ..	Receives also \$150 per annum from Department of Railways and Canals.
H. Deacon.....	1825	do .....	Heeley's Falls.....	July 1, 1878	200 00 do ..	
<i>Burlington Channel.</i>						
Thos. Campbell.....	April 1, 1832	Ferryman.....	Burlington.....	April 12, 1887	400 00 do ..	
H. Cotter.....		Asst. Ferryman.....	do .....	do 12, 1887	30 00 p. m'th.	
<i>Yamaska Lock.</i>						
A. Labbé.....		Lock-Keeper.....	Yamaska.....	Sept. 1, 1885	1 25 per day.	
O. Mineau.....		do .....	do .....	do 1, 1885	1 25 do ..	
<i>Esquimaux Graving Dock, B. C.</i>						
John Devereux.....		Dock Master.....	Esquimaux.....	do 17, 1887	166 66 p. m'th.	
C. Muir.....		Engineer.....	do .....	April 1, 1887	100 00 do ..	
A. D. Greeves.....		Carpenter.....	do .....	Dec. 1, 1887	80 00 do ..	



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APPENDIX No. 13.

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REPORT

ON

GOVERNMENT TELEGRAPH LINES,

FOR THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1889,

BY

F. N. GISBORNE, SUPERINTENDENT.

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## APPENDIX No. 13.

### REPORT ON GOVERNMENT TELEGRAPH LINES.

Ref. No. 102,968.

OTTAWA, 1st September, 1889.

SIR,—I have the honour to submit the following report upon the telegraph service for the twelve months ended 30th June, 1889, with the usual tabular statements of lines, operating staff, &c., established in the several districts.

In order to obviate the lack of correspondence that has heretofore existed between the revenue figures set down in my annual reports and those appearing in the departmental and other statements, in consequence of my reports embracing the entire traffic for the period July to June, inclusive, whereas the others only comprised such amounts as had come to hand during the fiscal year, as explained in the note appended to my last annual report, I have, in the within statement, departed from the usual course, and set down the amount of revenue actually brought to account up to the close of the fiscal year. This course will be observed hereafter, so that the figures appearing in the several printed reports will exactly agree.

I have the honour to be, Sir,

Your obedient servant,

F. N. GISBORNE,

*Superintendent Government Telegraph Service.*

A. GOBEIL, Esq.,  
Secretary Public Works Department,  
Ottawa.

### TELEGRAPH SERVICE—1888-89.

#### NEWFOUNDLAND.

The line between Cape Ray and Port au Basque was maintained and operated as in previous years, under an agreement made with the Anglo-American Telegraph Company, at the usual cost of \$250.

#### MARITIME PROVINCES.

The usual systems in the Maritime Provinces were operated satisfactorily under the same arrangements as in previous years.

The Meat Cove line, which was partly re-poled in the autumn of 1887, was further renewed last fall, and has since been in good condition; the unrenewed portions being sufficiently reliable for another two years service.

The cable between Grand Manan and Campobello became interrupted on the 2nd May of this year, 1889, and has not yet been repaired, in consequence of the S.S. "Newfield," the only properly equipped vessel we have for such work, being otherwise engaged.

In October last a loop was constructed by a local contractor, from the Mabou Cheticamp telegraph line to North-East Margaree, a distance of 5 miles. An office was opened at that place in the following month.

The revenue and expenditure in connection with the several lines in the Maritime Provinces was as follows.—

	Period inclusive.	Revenue.	Expenditure.
Escumiuac Line.....	April 88 to April 89.....	\$ 132 31	\$ 242 59
Meat Cove “ .....	March 88 to May 89.....	1,049 57	1,951 98
Cape Sable “ .....	March 88 to May 89.....	63 63	368 16
Bay of Fundy “ .....	June 88 to June 89.....	725 57	1,073 47
Cheticamp “ .....	March 88 to May 89.....	275 46	778 22

#### RIVER AND GULF ST. LAWRENCE.

The Bird Rock cable was again interrupted on the 26th April. It was soon afterwards discovered to have been caused by a mass of rock and ice crushing it at the base of Bird Rock. The operator in charge made a temporary repair, and later on the S.S. “Newfield” visited the spot, 21st June, and Capt. Guildford put in a short piece of new cable.

The shore end of the Anticosti cable was damaged by ice on the rocks near South West Point early in the spring; it was not telegraphically interrupted, however. The S.S. “Newfield” repaired the damage on the 15th June.

With these exceptions, the cables in the Gulf have been free of trouble during the year, and are at present in good order.

On the north shore St. Lawrence the telegraph line that had in the autumn of 1886 been constructed to Birch River was further extended to Sheldrake. The work of cutting poles and clearing roadway was begun in April, and conducted by days labor under the local inspector. In August the work of construction was proceeded with, and the line was completed to Sheldrake on the 15th September, when work was stopped for the season. During the present year this line will be further extended to Point aux Esquimaux.

The cables laid down last year in connection with the Grosse Isle quarantine station, failed to remain long in operation, and it was decided to replace them by cables of a much heavier type. Accordingly, in January last, four knots of heavy shore end cable was ordered from England, and this was laid in two sections by the S.S. “Newfield,” under my personal supervision, in June, and communication was re-established on the 9th of that month, since when the line has been free of interruption.

The others of the Gulf land lines and cables have been maintained in working order during the year.

The revenue and expenditure figures are as follows:—

	Period inclusive.	Revenue.	Expenditure.
Anticosti line.....	January, 1888 to June, 1889....	\$ 432 12	\$1,766 86
Magdalen Islands.	October, 1887 to February, 1889	642 48	2,812 81
North Shore, St. Lawrence, (W.B.)—	June 1888 to		
May, 1889 .....	.....	1,827 45	3,727 35
North Shore, St. Lawrence (E. B.) — Offices			
collectively .....	.....	843 25	4,213 18
Quarantine—	March, 1888 to April, 1889.....	295 20	633 57

#### ONTARIO.

The Bath Amherst Island line was, under an agreement entered into 8th February, 1889, leased to the North American Telegraph Company, for a period of twenty-one years, dating from 1st January, 1889. The company to pay an annual rental of \$1. The agreement is terminable at any time after three months notice.

The revenue and expenditure, up to date of transfer was as follows:—

	Revenue.	Expenditure
July, 1888, to December, 1889, inclusive .....	\$ 46 23	\$44 69

On the 30th August, 1888, a cable  $8\frac{3}{4}$  miles in length was laid under my personal supervision from Point Pelee to Pelee Island, in Lake Erie, for a connection between the latter place and Leamington, Ont. The land line sections, 11 miles on the Island and 12 miles on the main land, were constructed by day's labor. Work was begun on the 21st August, and completed on the 13th October. The line was equipped with telephones, three offices were opened on the Island and one at Point Pelee; connection was made with the Bell Telephone Exchange at Leamington, and a working arrangement was made with the company for the operation of the line in connection with their system. The line was opened for business on the 16th November.

The revenue and expenditure since the opening of the line was as follows:—

	Revenue.	Expenditure.
November, 1888 to May, 1889, inclusive.....	\$70 55	\$70 23

In September I also personally superintended the laying of two short sections of cable for the connection of Wolfe and Howe Islands by telephone with Kingston, Ont. The length from Wolfe Island to Howe Island was 1 mile, and that from Howe Island to the mainland  $\frac{1}{4}$  of a mile. The land line sections were constructed by the North American Telegraph Company in connection with whose system the line is being operated, under an agreement dated 21st January, 1889, whereby the company, for the sum of \$1,000, and sufficient material, excepting the poles, for 23 miles of line, together with the cables laid, undertook to operate the line in perpetuity without further expense to the Government. The revenue of this line accrues to the company.

#### NORTH-WEST TERRITORY.

The work of re-poling the Qu'Appelle-Humboldt section, which was under way when my last annual report was submitted, was duly completed in November.

A small building was erected at Saddle Lake, on the Battleford, Edmonton section, and an office and repairing station was established there in August, 1888.

The work of re-poling the Prince Albert line was also completed in the Autumn, and in April following a loop line was erected to Batoche, and an office established at that place. The lines throughout are now in first-class order.

In November last the inhabitants of Saskatoon offered to transfer to the Government the line built by them, assisted by a grant of the requisite material, excepting the poles, between Clark's Crossing and Saskatoon, 14 miles, to be operated in conjunction with the rest of the system. The line was subsequently taken over, and during the past season has been re-poled throughout and the route somewhat altered to secure greater facility of maintenance. The line is now in good working order.

In July a telephone system, embracing five offices, was established at Banff, N. W. T. The total length of line is  $4\frac{1}{2}$  miles, and connects the Mounted Police barracks with the Government offices and the hotels.

The revenue of the North-West Lines, June, 1888, to May, 1889, inclusive, was \$6,413.56; and the expenditure during the year was \$25,137.41.

#### BRITISH COLUMBIA.

The line north of Ashcroft is being operated, as arranged for, in connection with the Canadian Pacific Railway Telegraph system, at the expense of the Government. The present average expenditure for maintenance exceeds the revenue by about \$350.00 per month. The total excess of expenditure over revenue from the date of operation, under agreement, 1st October, 1886, to 31st December, 1888, was \$7,609.31 and from 1st January to 30th June, 1889, was \$2,137.55.

A line from Victoria to Cape Beale, a distance of about 115 miles, is now in course of construction along the south shore of Vancouver Island.

The revenue and expenditure in connection with the Provinces was as follows.—

Period inclusive.		Revenue.		Expenditure.	Remarks.
		\$	cts.	\$	cts.
Escumiauc Line.....	April 88 to April 89	432	12	4,166	86
Meat Cove ".....	March 88 ' March 89	642	48	4,912	81
Cape Sable ".....	March 88 ' March 89	1,049	57	1,951	98
Bay of Fundy ".....	June 88 ' June 89	63	63	368	16
Cheticamp ".....	March 88 ' March 89	132	31	242	59
		275	46	778	22
		725	57	1,073	47
		295	20	7,178	33
		1,827	45	3,727	35
		843	25	4,213	18
		nil		250	00
				9,686	77
		\$	6,287 04	38,549	72
			46 23		44 69
			70 55		70 23
		\$	6,403 82	\$38,664	64
			6,413 56	25,137	41
		\$12,817	38	\$63,802	05

The Bird Rock cab'

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South West Point

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*Note.*—The amount of expenditure on Anticosti Lines includes \$2,000 indemnity to the Anticosti Company for wood cut, etc., and \$400 for the s.s. Newfield in making cable repairs. The ordinary maintenance took up the balance \$1,766.76.  
The expenditure on Magdalen Island Lines includes \$2,100 for the s.s. Newfield in making cable repairs. The balance, \$2,812.81 was expended on ordinary maintenance.  
The expenditure on Quarantine Line includes cost of cable repairs and 4 knots new cable purchased in the spring; the outlay for ordinary maintenance was \$633.57.

F. N. GISBORNE,

Superintendent Government Telegraph Service.

OTTAWA, 1st September, 1889

# GOVERNMENT TELEGRAPH SERVICE.

## NEWFOUNDLAND TELEGRAPH SYSTEM.

No.	STATIONS.	Intermediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
		Miles.		\$ cts.		
1	Port au Basque.....	0	.....	50 00 or com'n.....	.....	N.B.—The commission is 25 per cent. upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2	Cape Ray Lighthouse.. ..	14	.....	50 00 do .....	.....	
	Totals... ..	14		100 00		
Cost of land line, \$1,763.36; interest thereon at 5 per cent., say..... \$ 90 00						
Estimated annual maintenance and repairs..... 160 00						
Total.....						\$250 00 Required in Estimates, 1889-90.

N.B.—The above short line is constructed in connection with the Signal Service, and connects at Port au Basque with the land line system of the Anglo-American Telegraph Company.

# RECAPITULATION.

	Revenue.	Expenditure.	Remarks.
<b>Gulf of St. Lawrence and Maritime Provinces :—</b>	<b>\$ cts.</b>	<b>\$ cts.</b>	
Anticosti Island lines .....	432 12	4,166 86	Signal Service and Meteorological Service messages transmitted free of charge.
Magdalen Islands lines .....	642 48	4,912 81	
Meat Cove line .....	1,049 57	1,951 98	
Cape Sable " .....	63 63	368 16	
Escuminac " .....	132 31	242 59	
Cheticamp " .....	275 46	778 22	
Bay of Fundy line .....	725 57	1,073 47	
Quarantine " .....	295 20	7,178 33	
North Shore St. Lawrence (W. B.) .....	1,827 45	3,727 35	
" " (E. B.) .....	843 25	4,213 18	
Cape Ray, Newfoundland .....	nil	250 00	
Subsidies, stationary line and office material, cable repairs and contingencies chargeable to the appropriation for Gulf lines .....		9,686 77	
<b>Ontario-Bath-Amherst Island line .....</b>	<b>\$ 6,287 04</b>	<b>38,549 72</b>	
Pelee Island line .....	46 23	44 69	
	70 55	70 23	
<b>North-West Telegraph Lines .....</b>	<b>\$ 6,403 82</b>	<b>\$38,664 64</b>	
	6,413 56	25,137 41	
<b>Total .....</b>	<b>\$12,817 38</b>	<b>\$63,802 05</b>	

NOTE.—The amount of expenditure on Anticosti Lines includes \$2,000 indemnity to the Anticosti Company for wood cut, etc., and \$400 for the s.s. Newfield in making cable repairs. The ordinary maintenance took up the balance \$1,766.76.

The expenditure on Magdalen Island Lines includes \$2,100 for the s.s. Newfield in making cable repairs. The balance, \$2,812.81 was expended on ordinary maintenance.

The expenditure on Quarantine Line includes cost of cable repairs and 4 knots new cable purchased in the spring; the outlay for ordinary maintenance was \$633.57.

F. N. GISBORNE,

*Superintendent Government Telegraph Service.*

OTTAWA, 1st September, 1889



# GOVERNMENT TELEGRAPH SERVICE.

## NEWFOUNDLAND TELEGRAPH SYSTEM.

No.	STATIONS.	Intermediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
1	Port au Basque.....	Miles. 0	.....	\$ cts. 50 00 or com'n.....	.....	N.B.—The commission is 25 per cent. upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2	Cape Ray Lighthouse.....	14	.....	50 00 do ..	.....	
	Totals.....	14		100 00		
Cost of land line, \$1,763.36; interest thereon at 5 per cent., say.....				\$ 90 00		
Estimated annual maintenance and repairs.....				150 00		
Total.....						\$250 00 Required in Estimates, 1888-90.

N.B.—The above short line is constructed in connection with the Signal Service, and connects at Port au Basque with the land line system of the Anglo-American Telegraph Company.

ANTICOSTI TELEGRAPH SYSTEM.  
ANTICOSTI ISLAND SERVICE.

No.	STATIONS.	Intermediate Distances.	Operators.	Salaries per annum.	Date of Appointment.	MEMO.
	*Fox Bay.....	Miles. 0	J. Stubbart.....	\$ cts. 50 00 or com'n.	Nov. 1, 1888	N.B.—The commission is 25 per cent. upon all business to and from the office; and commission guaranteed not to be less than at the rate of \$50 per annum.
3	Heath Point Lighthouse.....	23	T. Gagné.....	50 00	July 20, 1881	General Repairer. Plus \$1 per day when absent on duty.
4	*South Point Lighthouse.....	32½	A. Nadeau.....	50 00	Oct. 1, 1888	
5	*Shallop Creek.....	17½	B. Bradley.....	50 00	July 7, 1881	
	*Salt Lake.....	52½	F. Denault.....	360 00	Oct. 19, 1881	
6	South-West Point Lighthouse.....	15	{ Miss G. Pope..... E. Pope.....	200 00 100 00	Oct. 18, 1880 Aug. 1, 1882	Chief Operator since 1st August, 1882. District Superintendent. Plus \$1 per day when absent on duty.
7	Jupiter River.....	7	.....	50 00	.....	NOTE—A special allowance for maintenance of office, \$50 per annum, has been added to the commission for offices marked*, since September, 1887.
8	Otter River.....	17½	.....	50 00	.....	
9	*Beccarie River.....	22	M. Duguay.....	50 00	Oct. 1, 1886	
10	Cape Eagle (Ellis Bay).....	10	.....	50 00	.....	
11	West Point Lighthouse.....	14	A. Malouin.....	50 00	Aug. 1, 1881	
12	*English Bay.....	3	F. Cabot.....	50 00	July, 1, 1882	
	Total.....	214		1160 00		

ANTICOSTI TELEGRAPH SYSTEM.

GASPÉ.

No.	STATIONS.	Intermediate Distances.	Operators.	Salaries per annum.	Date of Appointment.	MEMO.
1	L'Anse à Fougère.....	Miles.		\$ cts. 50 00 or com'n.		N.B.—The commission is 25 per cent. on all business to-and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2	Gaspé Basin.....	28	J. J. Annett..	150 00	Oct. 16, 1881..	
		28		200 00		

ESTIMATED COST OF ANNUAL MAINTENANCE OF ANTICOSTI SYSTEM

Land lines—Salaries and repairs.....	\$3,000 00
Cables—Repairs, say.....	1,000 00
Total.....	\$4,000 00
Less—Revenue, probably.....	500 00
Balance deficit.....	\$3,500 00

## GOVERNMENT TELEGRAPH SERVICE—Continued.

## MAGDALEN ISLANDS TELEGRAPH SYSTEM.

## MAGDALEN ISLANDS SECTION.

STATIONS.	Inter- mediate Distances.	Operators.	Salaries per annum.	Date of Appointment.	MEMO.
1 Amherst .....	Miles. 0	Miss J. Shea .....	\$ cts. 50 00 or com'n.	Oct. 1, 1882.	N.B.—The commission is 25 per cent. on all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2 Amherst Lighthouse .....	9	Wm. Cormier .....	50 00 do	June 11, 1881.	Plus \$30 per annum for rent. General line repairer.
3 Etang du Nord Village .....	15	P. Pelletier .....	400 00 do	Dec. 1, 1881.	Plus \$30 per annum for rent. General line repairer.
4 do Lighthouse .....	1	T. O'Brien .....	50 00 do	do 1, 1881.	2-wire loop.
5 Cap aux Meules .....		W. Leslie .....	50 00 do	Aug. 9, 1883.	
6 do .....		A. LeBourdais, D. Supt. .....	500 00	do 17, 1880.	Plus \$1 per day when absent on duty.
6 House Harbour .....	8	P. L. Jonecas .....	50 00	June 1, 1888.	House Harbour Agency discontinued in July, 1887, was re-opened in June, 1888.
7 Wolfe Island .....	28½	N. Clark .....	200 00	June 1, 1888.	
8 Groses Isle .....	11	T. Turbide .....	50 00 or com'n.	do 29, 1881.	
9 Bird Rock .....		Miss McPhail .....	50 00	Feb. 18, 1882.	
10 Grand Entry .....	11				
Totals .....	83½		1,450 00		

# MAGDALEN ISLANDS TELEGRAPH SYSTEM.

## CAPE BRETON SECTION.

No.	STATIONS.	Intermediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	Memo.
1	Meat Cove (Cable Station).....	Miles. 0	A. B. McDonald.....	\$ cts. 420 00	Nov. 7, 1880	N.B.—The commission is 25 p. c. upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2	Aspy Bay.....	10½	R. G. Zwicker.....	50 00 or com'n..	Aug. 1, 1882	General repairer.
3	Neil's Harbour { ¼-way house. Loop Line.....	15 1½	M. McLeod.....	50 00 do	April 1, 1887	
4	Ingonish, North Bay.....	9	J. M. Burke.....	360 00 do	do	
5	South Ingonish.....	10½	Miss A. A. Baker.....	50 00 do	July 1, 1883	
6	French River.....	23	John McDonald.....	50 00 do	April 1, 1883	
7	St. Ann's, South Bay.....	19	Miss C. Morrison.....	50 00 do	do	N.B.—This section is at present operated and maintained by the Western Union Telegraph Company, but at the cost of the Government. The agreement is for ten years (expiring 18th April, 1891), but can be cancelled on one year's notice.
8	Baddeck (Loop Line).....	13	Miss Dunlop.....	50 00 do	Jan. 1, 1882	
9	Englishtown.....	6	Miss Bingham.....	50 00 do	July 19, 1882	
10	Kelly's Cove (N. Campbellton).....	2	Miss M. C. Campbell.....	50 00 do	April 1, 1885	
11	Big Bras d'Or.....	6	Mrs. E. Livingston.....	50 00 do	Jan. 1, 1889	
12	North Sydney.....	12½				Indian Brook agency opened in April, 1883, was discontinued and office opened at French Rivet.
	Totals.....	128½		1,230 00		

## ESTIMATED COST OF ANNUAL MAINTENANCE OF MAGDALEN ISLAND SYSTEM.

Local lines. Salaries and repairs.....	\$4,100 00
Cable. Repairs, say.....	1,000 00
Total.....	\$5,100 00
Less probable revenue.....	1,400 00
Balance deficit.....	\$3,700 00
	Required in Estimates, 1889-90.

## GOVERNMENT TELEGRAPH SERVICE—Continued.

## NOVA SCOTIA TELEGRAPH SYSTEM.

## CAPE SABLE SECTION.

No.	STATIONS.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
		Miles.		\$ cts.		
1	Barrington .....	0	W. U. Tel. Co.'s Agent.	50 00 or com'n.	Dec. 18, 1888	N.B.—The commission is 25 p. c. upon all business to and from the office; said commission guaranteed to be not less than at the rate of \$50 per annum.
2	Newelltown (including 1½ miles cable) .....	11	Miss E. A. Smith.....	50 00 do ..	April 1, 1889	
3	Cape Sable Island Lighthouse (including ¼ mile cable).....	6½	I. K. Doane .....	50 00 do ..	Dec. 18, 1888	
	Totals .....	17½		150 00		Newelltown office was closed from 30th June, 1888, till 1st April, 1889.

## Estimated cost of annual maintenance :—

Required in Estimates for 1889-90 .....	\$300 00
ted revenue do .....	150 00

## LOW POINT, CAPE BRETON SECTION.

STATIONS.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
1 Lingan.....	Miles. 0	.....	\$ cts. 50 00 or com'n..	.....	N.B.—The commission is 25 p. c. upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2 Low Point Lighthouse.....	5	S. Peters.....	50 00 do	Aug. 1, 1881	
Totals.....	5		100 00		

Estimated annual maintenance and repairs:—

Land line—Salaries and repairs..... \$150 00 Required in Estimates, 1889-90.

## EAST COAST SECTION.

N.B.—In connection with the Signal Service a land line 208 miles in length has been erected between Canso and Halifax for a bonus of \$16,000, and is now maintained and operated by the Western Union Telegraph Company without further cost to the Government.

## MABOU-CHETICHAMP, C. B., TELEGRAPH SYSTEM.

1 Mabou.....	0	Miss M. Finn.....	50 00 or com'n..	April 1, 1887	N.B.—The commission is 25 p. c. of the Government line tariff receipts, and is guaranteed to amount to not less than \$50 per annum.
2 Broad Cove.....	20	J. J. Campbell.....	do	Sept. 1, 1887	
3 Margaree Harbor.....	17	Mrs. M. A. McLellan.....	do	April 1, 1887	
4 N. E. Margaree (loop, 5 miles)	10	Miss B. M. Ross.....	do	Jan. 1, 1889	
5 Cheticamp.....	16	Mrs. M. Fiset.....	do	April 1, 1887	
Totals.....	63				

Estimated cost of annual maintenance.....

Estimated revenue..... \$650 00 Required in Estimates, 1889-90.

150 00

GOVERNMENT TELEGRAPH SERVICE—Continued.  
CHATHAM-ESCUMINAC, N.B., TELEGRAPH SYSTEM.

No.	STATIONS.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
1	Chatham.....	Miles. 0	Great North-Western Telegraph Co.	\$ cts. 185 00	.....	This amount is paid for supervision of the line and office accommodation at Chatham.
2	Black Brook.....	5½	.....	50 00 or com'n.	.....	The commission is 25 per cent. of the Government line tariff receipts, and is guaranteed to amount to not less than \$50 per annum. Black Brook office has been closed since Feb., 1887, in consequence of the agent having resigned.
3	Bay du Vin .....	15	Miss M. Williston .....	50 00 do	March 1, 1885	
4	Escuminac.....	9½	Mrs. A. Lewis.....	50 00 do	Sept. 1, 1885	
5	Point Escuminac Lighthouse...	12	H. W. Phillips, jun....	50 00 do	Feb. 1, 1885	
	Totals.....	42		385 00		

Estimated cost of annual maintenance, salaries and repairs .....	\$800 00 Required in Estimates, 1889-90.
Estimated revenue.....	150 00



## BAY OF FUNDY, N. B., TELEGRAPH SYSTEM.

## GRAND MANAN SECTION.

No.	STATIONS.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
	<i>Long Eddy Cable Hut, to</i>	Miles.		\$ cts.		
1	Flagg's Cove.....	3	{ Mrs. C. C. Seely (D. Supt.)	420 00	Nov. 18, 1880	N. B.—The commission is 25 p. c. upon all business to and from the office; said commission guaranteed not to be less than at the rate of \$50 per annum.
2	Woodward's Cove.....	6	Mias T. E. Milligan.....	50 00	Aug. 1, 1887	
3	Grand Harbour.....	2	E. Caneron.....	50 00 or com'n.	April 1, 1885	
4	Seal Cove.....	4½	F. A. Newton.....	50 00 do	do 1, 1887	
5	Southern Head Lighthouse.....	5½	D. G. McLaughlin.....	50 00 do	Jan. 1, 1883	
			O. McLaughlin.....	50 00 do	do 18, 1881	
			D. McKay, Repairer.....	60 00	May, 1, 1881	
	Totals.....	21		730 00		

## CAMPO BELLO SECTION.

	<i>Liberty Cove Cable Hut, to</i>	Miles.		\$ cts.	
1	Welchpool.....	7½	G. M. Mabree.....	100 00 or com'n.	Dec. 1, 1881
2	Eastport, Maine, U.S.A.....	½	J. Cushing.....	100 00	do 26, 1881
	Totals.....	8		200 00	

## ESTIMATED COST OF ANNUAL MAINTENANCE AND REVENUE.

Land lines—Salaries and repairs.....	\$1,600 00
Cable—Repairs, probably.....	1,000 00
Total.....	\$2,600 00 Required in Estimates,
Less probable revenue.....	700 00 1889-90.
Balance deficit.....	\$1,900 00

GOVERNMENT TELEGRAPH SERVICE—Continued.  
CHICOUTIMI AND NORTH SHORE OF ST. LAWRENCE TELEGRAPH SYSTEM.

CHICOUTIMI SECTION.

No.	STATIONS.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
		Miles.		cts.		
1	Bay St. Paul.....	0	F. Boivin.....	50 00 or com'n*	Previous to April 1, 1885 {	*The commission upon business is 25 per cent. of the tolls for the Government line; the amount guar- anteed to be not less than \$50 per annum.
2	St. Urbain.....	9	A. Boivin.....	50 00 do	do	
3	La Cruche.....	37	A. Gauthier (Repairer).....	420 do	do	
4	St. Alexis.....	31½	O. Pelletier.....	50 00 or com'n	May 15, 1887 {	
5	St. Alphonse de Bagotville.....	3	A. Simard.....	50 00 do	Jan. 1, 1889 {	
6	Chicoutimi.....	11½	D. Boly.....	50 00 do	April 1, 1885 {	
	Total.....	92		720 00	do 28, 1886 {	

MAINTENANCE.  
Included with North Shore Section.  
NORTH SHORE SECTION.

1	Murray Bay.....	0	Mrs. F. Vincent.....	50 00 or com'n*	Previous to April 1, 1885 {	Portneuf Mills office closed June, 1889
2	Cap à L'aigle.....	4	N. Duchene.....	50 00 do	June 1, 1888 {	
3	St. Fidèle.....	6	E. W. Tremblay.....	50 00 do	Previous to April 1, 1885 {	
4	Port au Percil.....	7	A. Brassard.....	50 00 do	May 1, 1889 {	
5	St. Siméon.....	4	D. Gaudin.....	50 00 do	Dec. 1, 1887 {	
6	Bate des Rochers.....	12	G. Savard.....	50 00 do	June, 1887 {	
7	Riv. aux Canards } Loop Line.	17	G. Bouillanne.....	50 00 do	Nov., 1886 {	
8	St. Etienne.....	13	M. McLaren (Repairer).....	420 00 or com'n	Dec. 1, 1887 {	
9	Tadoussac (1½ mile cable).....	15	G. E. Caron.....	50 00 do	Nov., 1886 {	
10	Bergeronnes.....	12	M. Savard.....	50 00 do	do 1, 1888 {	
11	Escoumains.....	8	J. H. Topping.....	50 00 do	April, do {	
12	Petit Romaine.....	8	R. C. Argall.....	50 00 do	June 1, 1889 {	
13	Mille Vaches.....	8	J. A. Furse.....	50 00 do	April, 1885 {	
14	Portneuf Mills.....	11½		50 00 do		

[illegible]

## GOVERNMENT TELEGRAPH SERVICE—Continued.

## GROSSE ISLE QUARANTINE TELEGRAPH SYSTEM.

No.	STATIONS.	Inter- mediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
1	Quebec.....	Miles. 0	Great North-Western Telegraph Co.	\$ cts. 185 00		This amount is paid for supervision of the line, and covers rent of pole line Quebec to L'Ange Gardien, for which \$35 per annum is charged.
2	L'Ange Gardien. St. Pierre ( $\frac{3}{4}$ mile cable).....	13 4	C. Turcott.....	50 00 or com'n.....	Mar. 1, 1885	
3	St. Pétronille.....	$4\frac{1}{2}$	Mrs. Blais.....	50 00 do	Oct. 1, 1887	This commission is 25 per cent. of the Government line tariff, and is guaranteed to amount to not less than \$50 per annum.
4	St. Laurent.....	$6\frac{1}{2}$	M. Gobeil.....	50 00 do	Sept. 15, 1888	
5	St. Jean.....	7	P. Pouliot.....	50 00 do	July 1, 1888	
6	St. François (including $5\frac{1}{4}$ miles cable).....	$6\frac{3}{4}$	M. Enond.....	50 00 do	Mar. 1, 1885	
7	Grosse Isle quarantine office.....	9	M. Langlois.....	50 00 do	Sept. 1, 1885	
8	do hospital.....	14	(Telephone).....			
	Total.....	52		485 00		

## ESTIMATED COST OF ANNUAL MAINTENANCE.

Land line salaries and repairs.....	\$ 850 00
Cable repairs.....	300 00
Required in Estimates, 1889-90.....	\$1,150 00
Estimated Revenue.....	\$ 200 00

GOVERNMENT TELEGRAPH SERVICE.—Continued.

ONTARIO: PEELE ISLAND TELEGRAPH SYSTEM.

STATIONS.	Intermediate Distances.	Agents.	Salaries per Annum.	Date of appointment.	MEMO.
1 Leamington .....		G. McR. Selkirk .....	\$50	Nov. 1, 1888.	Accountant and General Agent.
2 Point Pelee.....	12	} W. A. Grubb .....	Comsn. 25 p. c	do	The commission is upon the receipts for Government line.
Cable to Island.....	8½				
3 North Dock.....	1½	C. B. Quick.....	do	do	
4 West Dock.....	5	A. M. McCormick .....	do	do	
5 South Dock.....	4½	F. B. McCormick.....	do	do	
Total.....	31½				

This line is operated with telephones.

Estimated cost of actual maintenance..... \$250

The revenue will about cover the maintenance expenditure.

## GOVERNMENT TELEGRAPH SERVICE—Continued.

LINE IN THE NORTH-WEST TERRITORY.  
QU'APPELLE-EDMONTON SECTION.

No.	STATIONS.	Intermediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
		Miles.		\$ cts.		
1	Qu'Appelle.....	0	E. W. Warner.....	720 00	Jan., 1883..	
2	Fort Qu'Appelle.....	17	Miss A. Johnston.....	600 00	Mar. 1, 1885..	
3	Touchwood.....	46	A. Von Lindeburg.....	600 00	Nov. 1, 1883..	
4	Humbolt.....	78	J. M. Anderson.....	720 00	May 1, 1884..	
5	Clarke's Crossing.....	55	R. J. Molloy, Agent.....	720 00	do 1, 1884..	
6	Henrietta.....	38	J. Harrington, Repairer.....	600 00	Jan. 1, 1888..	
7	Battleford.....	47	W. Salisbury, Repairer.....	720 00	Oct. 1, 1886..	
8	Fort Pitt.....	47	W. M. McDonald.....	720 00	May 1, 1889..	
9	Moose.....	89	H. Sikes, Repairer.....	600 00	May 1, 1889..	
10	Saddle Lake.....	45½	A. Guimont, Repairer.....	600 00	June 1, 1889..	
11	Victoria.....	46	J. F. Lake, Repairer.....	600 00	May 8, 1889..	
12	Fort Saskatchewan.....	37	W. E. A. Levesque.....	600 00	July 1, 1888..	
13	Edmonton.....	49	W. C. Gillis, Repairer.....	720 00	Jan., 1887..	
		24	W. C. Ross, Agent.....	Com. 25 p. c.	Dec., 1886..	
			A. Taylor, Agent.....	720 00	Prev. to 1882..	
			W. McKay, Repairer.....	720 00	May 1, 1886..	
<i>Branch Line—</i>						
	Clarke's Crossing.....	0				
14	Batoche (Loop 1 mile).....	42	L. P. O. Noel.....	720 00	Apr. 10, 1889..	
15	Duck Lake.....	9	H. McCleneghan.....	720 00	Aug. 1, 1888..	
16	St. Laurent.....	9	N. Potvin.....	720 00	June 1, 1889..	
17	Prince Albert.....	23	E. J. Rankin.....	720 00	March, 1887..	
18	Clarke's Crossing.....	0				
19	Saskatoon.....	14				
	Edmonton.....	0	See note a.			
	St. Albert.....	9				
	Total.....	676½				a. The Saskatoon and St. Albert branch lines are operated with telephones.

Estimated cost of annual maintenance—salaries, supplies and repairs, including the Wood Mountain Section—required in Estimates, 1889-90, \$20,000.

## NORTH-WEST TELEGRAPH LINES.—WOOD MOUNTAIN AND FORT MACLEOD SECTIONS.

STATIONS.	Intermediate Distances.	Operators.	Salaries per Annum.	Date of Appointment.	MEMO.
	Miles.		\$ cts.		
<i>Fort MacLeod Line—</i>					
1 Galt Junction.....	0				The Fort MacLeod line has been leased to the North-West Coal and Navigation Co. at 5 per cent. per annum upon cost of construction.
2 Lethbridge.....	107				
3 McLeod.....	28½				
4 Fort MacLeod.....	½				
<i>Wood Mountain Line—</i>					
1 Moose Jaw.....	0	H. Rutherford.	240 00		The Wood Mountain line is operated directly, as part of the Government Telegraph Service.
2 Wood Mountain.....	90½	J. S. Macdonald.....	720 00		
Total.....	226½		960 00		

## GOVERNMENT TELEGRAPH SERVICE IN BRITISH COLUMBIA.

Office.	Inter-mediate Distances.	Names.	Positions.	Salaries per month.	Date of Appointment.	MEMO.
	Miles.					
Ashcroft Station	0					This line is now operated by the Canadian Pacific Railway Co. for the Government. The arrangement being terminable at any time.
Cache Creek	4					
Clinton	26					
Bridge Creek	53					
Soda Creek	78					
Quispelle	54					
Stanley	48					
Barkerville	13					
	276					
<i>Branch.</i>						
New Westminster.						This line was leased for 99 years to Messrs. J. A. Laidlaw and J. Wilson, on the 30th October, 1887.
Ladner's Landing ( $\frac{1}{2}$ mile cable)	18					
Total	294					

Estimated cost of maintenance, including general repair of line, \$6,500, required in Estimates, 1889-90.



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APPENDIX No. 14.

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TABULAR STATEMENTS

SHOWING THE DATES OF THE

OPENING AND CLOSING OF NAVIGATION

AT THE

PRINCIPAL PORTS OF CANADA,

ON THE SEABOARD AND ON THE GULF, RIVER, AND LAKES ON THE  
ST. LAWRENCE; ALSO PORTS WHICH ARE ALWAYS OPEN.

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## APPENDIX No. 14.

Ref. No. 103,880.

## STATEMENT of the Closing of Navigation in the Fall of 1888, and of the Opening in the Spring of 1889.

Name of Port.	Location.	Closed in 1888.	Opened in 1889.	Remarks.
Charlottetown, P.E.I.....	Gulf St. Lawrence .....	Jan. 12, 1889	March 30..	Spring tides, 9 to 10 feet; neap tides, 6 to 8 feet. Depth at end of pier, 22 feet.
Georgetown .....	do .....	Feb. 25, 1889	do 6..	Spring tides rise $5\frac{1}{2}$ feet; neaps 4 feet.
Pictou, N.S.....	do .....	Jan. 14, 1889	do 14..	Neap tides rise about $4\frac{1}{2}$ feet. Springs 6 to 7 feet.
Sydney .....	do .....	Feb. 8, 1889	April 4..	
Shediac, N.B.....	do .....	December 12..	do 18..	Spring tides rise, 4 feet; neaps $2\frac{1}{2}$ feet.
Campbellton .....	Baie des Chaleurs .....	November 18..	do 25..	Spring tides rise, 10 feet; neaps 6 feet.
Bathurst .....	do .....	Closed Nov. 21, opened again and finally closed Dec. 5.		
Percé, P.Q.....	Gulf St. Lawrence .....	November 23..	do 25..	Spring tides rise 7 feet; neaps 4 feet.
Gaspé Basin .....	do .....	December 27..	do 20..	Spring tides rise about 5 feet.
Tadoussac .....	River St. Lawrence .....	do 5..	May 1..	Rise and fall of tide about 6 feet.
Quebec .....	do .....	November 24..	March 15..	Spring tides rise 23 feet.
Sorel .....	do .....	December 13..	{ May 23..	From Sea.
St. John's .....	River Richelieu .....	November 24..	{ April 16..	Inland Navigation. Rise and fall of tide from 18 to 18 feet.
Montreal .....	do .....	December 14..	do 18..	
Three Rivers .....	River St. Lawrence .....	November 28..	do 27..	
Kingston, Ont.....	do .....	November 28..	do 20..	
Belleville .....	Lake Ontario.....	Jan. 19, 1889	do 2..	
Port Hope .....	do .....	November 25..	do 13..	
Toronto .....	do .....	December 10..	do 2..	
Port Stanley .....	do .....	do 20..	do 15..	
Port Dover .....	Lake Erie .....	Feb. 9, 1889	March 15..	
Windsor .....	do .....	December 12..	do 15..	
Samia .....	Detroit River .....	December 17..	April 15..	Navigation never closed here.
Goderich .....	Lake Huron .....	November 24..	do 8..	
Kincardine .....	do .....	December 4..	March 26..	
Owen Sound .....	Georgian Bay .....	do 4..	do 14..	
Collingwood .....	do .....	do 1..	do 22..	
Warton .....	do .....	November 28..	do 18..	
Sault Ste. Marie .....	Lake Superior .....	December 4..	do 17..	
Port Arthur .....	do .....	do 29..	do 13..	
Winnipeg, Man.....	Red River .....	November 15..	do 25..	

No. 2.—STATEMENT showing some of the Ports in the Dominion which are open to Navigation the whole Year.

Name of Port.	County.	Province.	Depth of water at low water.	Remarks.
Annapolis .....	Annapolis .....	Nova Scotia.....	15 to 20	In very severe winters thin ice forms, but screw steamers could always enter.
Barrington .....	Shelburne .....	do .....	12 to 20	At anchorage. Wharves dry at low water.
Digby .....	Digby .....	do .....	18	About 10 feet at end of steamboat pier.
Halifax .....	Halifax .....	do .....	20 to 30	At wharves, 70 to 100 feet in harbour.
Liverpool .....	Queen's .....	do .....	7	On bar, at Brooklyn, 24 feet.
Lockeport .....	Shelburne .....	do .....	8	
Lunenburg .....	Lunenburg .....	do .....	12	
Parrsboro' .....	Cumberland .....	do .....		Dry in harbour at low water.
Shelburne .....	Shelburne .....	do .....	40 to 60	
Yarmouth .....	Yarmouth .....	do .....	13	
St. Andrews .....	Charlotte .....	New Brunswick.	14	In inner harbour.
St. John. ....	St. John. ....	do .....	20	At entrance of harbour, 60 feet in harbour.
St. Stephens .....	Charlotte .....	do .....	6	30 feet at the ledge, 4 miles below the town.
*Tadoussac.....	Saguenay .....	Quebec .....	30 to 50	
Windsor .....	Essex .....	Ontario .....		Ferry boats cross Detroit River all winter.

\* See remarks respecting Tadoussac Harbour in Appendix No. 8 of General Report 1867-82.

Victoria, Nanaimo, Burrard Inlet and all other ports in British Columbia, up to Skena River are always open. New Westminster is liable to be closed 7 to 15 days. See telegram No. 34,027 from the Hon. J. W. Trutch, 3rd May 1883.

*Tides in British Columbia.*—At Victoria ordinary springs rise from 7 to 10 feet; neaps 5 to 8 feet; at Nanaimo ordinary springs rise 14 feet; neaps 11 feet; at New Westminster ordinary springs rise 7 feet; neaps 4 feet; at Hastings, Burrard Inlet, ordinary springs rise 16 feet; at Port Moody, ordinary springs rise 10 to 12 feet; neaps 5 to 6 feet. See telegram from Hon. J. W. Trutch, 25th October, 1883, No. 39,810.

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**APPENDIX No. 15.**

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**STATEMENTS.**

**1ST.—CONTRACTS LET BY THE DEPARTMENT.**

**2ND.—PROPERTY PURCHASED BY THE DEPARTMENT.**

**3RD.—PROPERTY LEASED BY OR TO THE GOVERNMENT.**

**DURING THE FISCAL YEAR ENDED 30<sup>TH</sup> JUNE, 1889.**

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## APPENDIX No. 15.

Ref. No. 104,411.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 2nd September, 1889.

SIR,—I have the honour to enclose the following statements which are required for insertion in the annual report for 1888-89, viz.:—

No. 1.—Statement of Contracts let by this Department during the fiscal year ended 30th June last.

No. 2.—Statement of Property purchased and sold by this Department during the same period.

No. 3.—Statement of Property leased to and by this Department during the same period.

I have the honour to be, Sir,

Your obedient servant,

F. X. R. SAUCIER.

A. GOBEL, Esq.,  
Secretary Department of Public Works.  
Ottawa.

No. 1.—CONTRACTS let by the Department of Public Works of Canada, from the 30th June, 1888, to the 30th June, 1889.

Works.	Names of Contractors.	Date of Contract.	Amount.
<b>PUBLIC BUILDINGS.</b>			\$ cts.
<i>Government House, Parliament and Departmental Buildings.</i>			
New Departmental Building, Wellington street—Hot water heating apparatus.....	Garth & Co .....	Aug. 16, 1888	15,500 00
New Departmental Building, Wellington street—Iron staircases.....	A. Charlebois.....	Sep. 7, 1888	11,040 90
New Departmental Building—Three passenger and 1 freight elevators.....	J. Fensom.....	Oct. 10, 1888	39,877 00
New Departmental Building—Smoke stack in connection with hoist machinery.....	do .....	Dec. 14, 1888	700 00
New Departmental Building—Ten vault doors.....	J. & J. Taylor.....	Mar. 13, 1889	2,500 00
Parliament and Departmental Buildings—Supply of coal.....	G. F. Thompson.....	July 5, 1889	12,858 53
Parliament and Departmental Buildings—Removal and putting up of winter sashes and blinds from and to windows.....	I. Hortie.....	Nov. 14, 1888	1,606 50
Parliament and Departmental Buildings—Removal of snow.....	P. McKenna.....	do 23, 1888	539 00
Parliament and Departmental Buildings—Covering steps for winter.....	W. Millions.....	Dec. 1, 1888	185 00

## No.— 6.—CONTRACTS let by the Department of Public Works—Continued.

Works.	Names of Contractors.	Date of Contract.	Amount.
<b>PUBLIC BUILDINGS—Continued.</b>			
<i>Government House, Parliament and Departmental Buildings—Concluded.</i>			\$ cts.
Parliament and Departmental Buildings—Supply of ice.	C. A. Christin.....	Mar. 2, 1889	p. block 10
do Building—Covering with copper flat roofs between Library and main building, and skylight.....	Douglas Bros.....	July 16, 1888	1,396 00
do Library—Covering with copper sloping roofs	do .....	Aug. 17, 1888	5,100 00
Rideau Hall—Covering 2 roofs with galvanized iron.....	I. Hortie.....	July 10, 1888	p. sq. 13 00
do Clearing snow.....	J. Bruce.....	Nov. 27, 1888	595 00
do Supply of ice.....	D. N. Charlebois.....	Mar. 2, 1889	p. foot 04
<i>Nova Scotia.</i>			
Amherst Post Office—To light with incandescent light.	Electric Light Co.....	Aug. 2, 1888	per lamp
do Public Building—Supply of coal.....	Acadia Coal Co. ....	Aug. 8, 1888	p. night 04
Annapolis do Erection.....	Rhodes, Curry & Co. ....	June 17, 1889	254 04
Antigonish do Supply of coal.....	J. Kenna .....	Aug. 8, 1888	12,497 00
Baddeck do do .....	J. McDonald.....	do 8, 1888	67 50
Halifax Public Buildings do .....	Glace Bay Mining Co. ....	do 24, 1888	98 00
do do Alterations to appraiser's office.	J. Mulroney.....	July 27, 1888	598 40
Nappan Experimental Farm—Residences for superintendent and workman, barn and stabling.....	J. Mulroney.....	July 27, 1888	125 00
New Glasgow Public Building—Supply of coal.....	Rhodes, Curry & Co. ....	Aug. 15, 1888	13,900 00
North Sydney Post Office do .....	J. Muir & Sons.....	do 8, 1888	145 00
Pictou C. H. and M. H. do .....	C. A. Robertson .....	do 8, 1888	185 00
Sydney (South) C.B. Public Building—Erection.....	Acadia Coal Co. ....	do 8, 1888	207 05
Truro Public Building—Supply of coal.....	Connor & Donald.....	Dec. 12, 1888	13,977 75
Windsor do do .....	J. Kenna .....	Aug. 8, 1888	45 00
Yarmouth do do .....	Acadia Coal Co. ....	do 8, 1888	226 68
	do .....	do 8, 1888	200 00
<i>Prince Edward Island.</i>			
Charlottetown Public Building—Supply of water.....	Water Com. of Ch'town	Mar. 14, 1889	p. an. 225 00
do do do coal.....	C. Lyons.....	Aug. 8, 1888	527 78
Montague Post Office—Supply of coal.....	J. McEvoy.....	do 8, 1888	74 87
Summerside do do .....	J. Read .....	do 8, 1888	297 91
<i>New Brunswick.</i>			
Bathurst Post Office—Supply of coal.....	Gillespie & Sadler.....	Aug. 8, 1888	383 01
Dalhousie Public Building—Erection.....	A. G. McKenzie.....	July 31, 1888	10,489 00
Frederickton do Supply of coal.....	R. P. & H. F. Starr.....	Aug. 27, 1888	383 57
Moncton do do .....	Acadia Coal Co. ....	do 8, 1888	259 43
Newcastle do do .....	Gillespie & Sadler.....	do 8, 1888	419 49
Portland do do .....	R. P. & W. F. Starr.....	do 27, 1888	30 44
St. John do do .....	do do .....	do 27, 1888	3,183 61
St. Stephen do do .....	C. H. Clerke.....	do 8, 1888	81 00
Sussex do do .....	R. P. & W. F. Starr.....	do 27, 1888	221 57
Woodstock do do .....	C. H. Clerke.....	do 8, 1888	255 17
do do Clock for tower.....	E. Chanteloup.....	June 14, 1889	1,900 00
<i>Quebec.</i>			
Aylmer Post Office—Hot water heating apparatus.....	E. B. Butterworth.....	Jan. 30, 1889	659 00
do do Fittings, furniture and shed.....	D. B. McDonald.....	Mar. 13, 1889	2,300 00
Coaticook Post Office—Hot water heating apparatus.....	W. Clendinneng & Son	Feb. 28, 1889	900 00
do do Fittings.....	T. T. Shurtliff.....	Mar. 7, 1889	1,100 00
Grosse Isle Quarantine Station—Sundry works.....	G. Beaucage.....	Aug. 20, 1888	1,500 00
Hull Post Office—Supply of coal.....	G. F. Thompson.....	do 8, 1888	274 21
Joliette Public Building—Drain, heating apparatus and Post Office fittings.....	G. Beaucage.....	Nov. 23, 1888	3,359 50
do do Additional work on drain.....	do .....	Jan. 11, 1889	1,170 00



No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Continued.*

Works.	Names of Contractors.	Date of Contract.	Amount.
PUBLIC BUILDINGS— <i>Continued.</i>			8 cts.
<i>Quebec—Concluded.</i>			
Montreal Post Office—Cleaning down and pointing with oil cement rear elevation.	L. Cousineau.....	July 3, 1888	1,000 00
do Public Buildings—Supply of coal	W. F. Torrance.....	Aug. 22, 1888	4,339 21
do Post Office—Supply of electric current for 237 lamps	"Gazette" Print'g Co.	Nov. 29, 1888	per lamp p.an. 16 00
do do Removal of snow from roof during winter.	L. Barré.....	Dec. 14, 1888	100 00
Quebec Public Buildings—Supply of coal	Madden & Ellis.....	Sept. 4, 1888	1,284 29
do *Marine Hospital—Fuel wood.	Lawrence & Broomer..	do 6, 1888	1,650 00
Sorel Post Office—Supply of coal.	T. Bellefeuille.....	Aug. 8, 1888	287 50
St. Jérôme Post Office—Heating apparatus.	E. Chanteloup.....	Apr. 2, 1889	1,200 00
do do Additional works.	J. Fitzpatrick.....	May 17, 1889	1,109 10
do do Fittings.	do	June 15, 1889	1,125 00
St. John's Public Building—Supply of coal.	Bissett & Donaghy....	Aug. 8, 1888	188 00
do do Incandescent electric light g.	C. F. Beauchemin & Co.	Dec. 18, 1888	p.an. 250 00
St. Vincent de Paul Penitentiary—Fuel wood; red spruce, maple and birch.	Dufresne & Mougénais	Jan. 3, 1889	1,221 00
Three Rivers Public Buildings—Supply of coal.	Z. Marchand.....	Aug. 8, 1888	557 22
<i>Ontario.</i>			
Almonte Public Building—Erection.	R. Cameron.....	June 11, 1889	13,395 00
Amherstburg do Supply of coal	J. G. Mullen.....	Aug. 8, 1888	243 25
Barrie do do	J. S. Johnston.....	do 8, 1888	250 00
do do Incandescent electric light g.	Barrie Elec. Light Co.	Nov. 30, 1888	p.an. 250 00
Belleville do Supply of coal	The Downey Co.....	Aug. 8, 1888	373 75
Berlin do do	Kloepfer & Co.....	do 8, 1888	91 96
Brampton do Erection.	Perry, Mason & McCulloch.....	Oct. 23, 1888	16,350 00
do do Substituting pressed to common brick for facing external walls.	do do	Nov. 23, 1888	500 00
Brantford do Supply of coal	Thos. T. Elliott.....	Aug. 8, 1888	286 64
Brockville do do	Hugh McCullough.....	do 8, 1888	261 00
Cayuga do Interior fittings and vault doors.	T. & R. Draper.....	Dec. 3, 1888	1,370 00
do do Hot water heating apparatus	A. Clark.....	do 13, 1888	470 00
Chatham do Supply of coal	T. Elliott.....	Aug. 8, 1888	235 65
Clifton do do	Coulson & Robinson..	do 8, 1888	220 00
Cornwall do do	Grant & Conroy.....	do 8, 1888	256 00
Cobourg Customs Offices—Additions and alterations.	Henderson & Henderson	Dec. 15, 1888	8,825 00
Galt Public Building—Supply of coal.	J. Malcolm.....	do 15, 1888	179 33
Gananoque Custom House—Supply of coal	Rathbun Co.....	Aug. 8, 1888	192 00
do do and Post Office—Granolithic footpath.	R. Forsythe.....	do 30, 1888	450 00
do Post Office—New drain.	G. Wilson.....	do 21, 1888	200 00
Gananoque Public Buildings—Incandescent lighting.	Gananoque Electric Light Company.....	May 3, 1889	p.an. 235 00
Goderich do Erection	Tambling & Jones.....	Nov. 12, 1888	12,063 00
Guelph Post Office—Hot water heating apparatus.	J. Sim & Co.....	do 24, 1888	1,508 00
Hamilton Drill Hall do do	Adam Clark.....	Sep. 12, 1888	3,163 00
do Public Building—Supply of coal.	Æ. Mackay's Sons.....	Aug. 8, 1888	954 00
do Drill Hall—Changing position of coils in Armories.	A. Clark.....	Dec. 22, 1888	270 00
Lindsay Public Building—Erection	P. Navin.....	July 5, 1888	16,497 00
do Post Office—Fittings	do	Feb. 11, 1889	1,600 00
do Public Building—Heating apparatus.	E. Woods.....	Apr. 13, 1889	1,549 00
London do Supply of coal	Bowman & Co.....	Aug. 8, 1888	441 60
Napanee do Additional works.	G. Newlands.....	Nov. 10, 1888	1,309 00
do do Heating apparatus.	do	Jan. 21, 1889	2,000 00
do do Interior fittings.	do	Jan. 25, 1889	2,000 00
Orangeville do Supply of coal	J. Morrison.....	Aug. 8, 1888	135 45

No. 1.—CONTRACTS let by the Department of Public Works, &c.—*Continued.*

Works.			Names of Contractors.	Date of Contract.	Amount.
PUBLIC BUILDINGS— <i>Concluded.</i>					\$ cts.
Ontario— <i>Concluded.</i>					
Ottawa	Experimental Farm—	Kitchens, sheds and fences for cottages Nos. 2 and 3	Tobin & O'Keefe.....	July 10, 1888	460 00
do	do	Greenhouses.....	Beaudet & Desjardins..	do 30, 1888	5,212 60
do	do	Sheeting walls and ceiling stable.....	W. Stuart.....	do 25, 1888	297 00
do	do	Heating apparatus for museum and offices and for greenhouses and seed stores.....	Garth & Co.....	Oct. 15, 1888	3,150 00
do	do	1 cottage and stabling in rear of Supt.'s residence.	Tobin & O'Keefe.....	do 23, 1888	2,750 00
do	do	Laboratory fittings and furniture.....	W. Stuart.....	Nov. 2, 1888	1,009 72
do	do	Light to museum, laboratory and offices, Springfield Gas Company's gas machine.....	Garth & Co.....	Dec. 24, 1888	600 00
o	do	Plumbing at laboratories..	W. Stuart.....	Feb. 13, 1889	355 00
do	New Departmental Building, Fisheries Exhibition, Printing Bureau and Major's Hill Park	—Supply of water to.....	Corporation City of Ottawa.....	Apr. 11, 1889	p. ann 2,500 00
do	Printing Office (formerly occupied by McLean, Roger & Co.)—Repairs.....		Is. Gratton.....	July 24, 1888	146 85
do	Government Printing Bureau—	Substituting terra-cotta lumber bricks to common brick in arched ceilings.....	J. E. Askwith.....	Nov. 21, 1888	1,725 00
do	Government Printing Bureau—	Substituting granolithic to wooden floors in press room and basement.....	do.....	Jan. 30, 1889	5,875 00
do	Government Printing Bureau—	Main stairs.....	do.....	Apr. 24, 1889	2,000 00
do	do	2 freight elevators.....	do.....	do 10, 1889	6,600 00
do	do	Fittings in ground floor room of Stationery office.....	do.....	June 24, 1889	1,881 00
Pembroke	Public Building—	Erection.....	Munro, Beatty & Grieve	July 21, 1888	16,700 00
Peterborough	Post Office—	Supply of water.....	Peterborough Water Co	Aug. 2, 1888	p. an. 75 00
do	Public Building—	Supply of coal.....	do Gas Co..	do 8, 1888	148 43
Port Hope	do	do.....	Brown & Hemming...	do 8, 1888	190 00
Prescott	do	Erection.....	Ward, Cairns & Steel..	Nov. 7, 1888	19,210 00
do	do	Carrying lean-to to same height as main building	do do	June 28, 1889	3,682 00
Stratford	do	Supply of coal.....	T. Elliott.....	Aug. 8, 1888	302 85
St. Catharines	do	do.....	Eli Gasby.....	do 8, 1888	151 88
do	do	do.....	H. O'Loughlin.....	do 8, 1888	151 60
St. Thomas	do	do.....	E. A. Lewis.....	do 8, 1888	364 00
Toronto	do	do.....	S. Crane & Co.....	do 8, 1888	2,448 06
Trenton	do	Increasing height of tower.....	W. Alford.....	Nov. 6, 1888	750 00
do	do	Heating apparatus.....	do.....	Feb. 20, 1889	1,950 00
do	do	Post Office fittings and changing vault doors..	do.....	Mar. 19, 1889	975 00
Windsor	do	Supply of coal.....	J. & T. Hurley.....	Aug. 8, 1888	420 25
Manitoba.					
Brandon	Public Building—	Erection.....	Jno. Hanbury.....	June 18, 1889	31,500 00
Stony Mountain	Penitentiary—	Machinery for new steam laundry.....	Garth & Co.....	July 25, 1888	7,125 00
do	do	Residences for chaplains and surgeon.....	Tobin & O'Keefe.....	Jan. 24, 1889	16,500 00
St. Paul's	Industrial School Buildings—	Erection.....	Madden & Bruce.....	May 13, 1889	18,955 00
Winnipeg	Public Buildings—	Supply of coal.....	N. W. Coal & Transp. Co	Aug. 8, 1888	1,702 50
do	do	do.....	Dom. do	do 8, 1888	2,165 80

## No. 1.—CONTRACTS let by the Department of Public Works, &amp;c.—Continued.

Works.	Names of Contractors.	Date of Contract.	Amount.
<b>PUBLIC BUILDINGS—Continued.</b>			<b>\$ cts.</b>
<i>North-West Territories.</i>			
Battleford—N.W.M.P. Barracks—Repairs.....	J. N. Pomerleau.....	Oct. 6, 1888	1,843 00
do do Buildings—Repairs to woodwork.....	Oliver & Schnieder....	do 9, 1888	1,376 06
do do do Painting.....	D. Arcand.....	do 9, 1888	402 00
Calgary Barracks—4 hot-air furnaces.....	N. D. McDonald & Co.	Sep. 26, 1888	1,492 00
do Court House—Erection.....	J. G. McCallum.....	Nov. 8, 1888	26,150 00
Fort Macleod—Stables for N.W.M.P.—Erection.....	Williams & Willoughby	do 2, 1888	5,800 00
Indian Head Experimental Farm Buildings—Erection.....	L. R. Reilly.....	do 5, 1888	18,780 00
do do Gurney's new Harris furnace.....	J. W. Smith.....	May 3, 1889	495 00
Regina Riding Hall—Erection.....	J. Stewart.....	Nov. 3, 1888	23,500 00
do N.W.M.P. Commissioner's House—New Harris-Gurney furnace.....	J. W. Smith.....	do 6, 1888	225 00
do Lieut.-Governor's Residence—Erection.....	W. Henderson.....	Mar. 19, 1889	26,950 00
do "White Farm" Indian Industrial School buildings—Erection.....	Williams & Willoughby	May 14, 1889	35,100 00
<i>British Columbia.</i>			
Kamloops—Industrial School buildings—Erection.....	J. D. Ross.....	June 4, 1889	8,450 00
Kuper Island—do do.....	W. Rockett.....	May 27, 1889	7,950 00
New Westminster Penitentiary—Warden's Residence—Erection.....	Ackerman Bros. ....	Apr. 23, 1889	9,938 00
<b>HARBOURS AND RIVERS—DREDGING AND DREDGE VESSELS.</b>			
<i>Nova Scotia.</i>			
Arisaig—Extending and repairing pier.....	S. O'Donoghue.....	May 7, 1889	4,750 00
Cheticamp Wharf—Construction.....	A. McKinnon.....	June 10, 1889	2,700 00
Digby—Erection of waiting room and office on pier.....	E. Bates.....	May 16, 1889	315 00
East River, Sheet Harbour—Ballast Wharf—Construction.....	S. D. Oakes.....	Jan. 9, 1889	1,775 00
<i>New Brunswick.</i>			
Campbellton Ballast Wharf—Construction.....	Gibson & Odell.....	Apr. 23, 1889	6,999 00
Edgett's Landing do do.....	Wallace & Derry.....	Jan. 15, 1889	4,386 00
Mizzonette Point—Public Landing—Construction.....	P. & F. Therrieau....	Feb. 19, 1889	1,700 00
St. Louis Wharf—Construction.....	G. & J. Robertson....	Nov. 6, 1888	1,800 00
<i>Quebec.</i>			
Baie St. Paul—Cap aux Corbeaux—Crib-work.....	Cimon & Tremblay....	Sep. 10, 1888	4,994 00
New Carlisle—Additional length to wharf.....	Heney & McDonald....	Dec. 17, 1888	6,499 00
Portage du Fort—Village Bridge—Painting 2 coats.....	J. Coyne.....	Apr. 6, 1889	0 14 per sq. yd.
<i>Ontario.</i>			
Chatham—McGregor's Creek—Pile protection work....	Flook & Babcock.....	Dec. 27, 1888	8,695 00
Kingston Dry Dock—Construction.....	Bancroft, Connolly & Connolly.....	Apr. 23, 1889	Schd. rates.
Ottawa River—Re-construction of Suspension Bridge..	Rousseau & Mather....	Nov. 15, 1888	28,875 00
Penetanguishene—Works in the harbour.....	Porter & Reed.....	do 28, 1888	18,000 00
Port Arthur—Further length of breakwater.....	Kirby & Stewart.....	Oct. 30, 1888	124,000 00
River aux Puceux—Sheet piling.....	Odette, Lyons & McHugh.....	Sep. 18, 1888	1,987 00
Sault Ste. Marie—Crib-work.....	Lefebvre & Parker....	Oct. 29, 1888	9,985 00
Toronto—Improvement of eastern entrance to harbour..	Murray & Cleveland..	May 21, 1889	Schd. rates.

## No. 1.—CONTRACTS let by the Department of Public Works, &amp;c.—Continued.

Works.	Names of Contractors.	Date of Contract.	Amount.
DREDGE VESSELS AND PLANT.			\$ cts.
Maritime Provinces—Construction of 3 centre dumping scows for dredges in.....	T. Robley .....	Apr. 11, 1889	4,200 00
Maritime Provinces—Construction of 2 centre dumping scows for dredge "New Dominion" .....	I. J. Olive .....	June 18, 1889	1,840 00
Montreal and Quebec Ship Channel—Supply of coal for dredging plant.....	H. Dobell & Co. and Carbray & Routh ..	Ap. 18-27, '88	Schd. rates.
TELEGRAPH LINES AND SERVICE.			
Manicouagan and Godbout Rivers—Bridle path and 3 protection huts between.....	N. A. Comeau.....	Aug. 25, 1888	900 00
Margaree—Loop line to north-east—Construction .....	J. M. Smith .....	June 25, 1888	236 00
N. W. Territories—Supply of oats for horses, at 8 stations	A. Macdonald, R. J. Molloy and J. M. Campbell .....	Sep. 13, 1888	Schd. rates.
do Humboldt and Qu'Appelle—Re-poling telegraph line between.....	E. Grundy.....	July 31, 1888	do
Pelee Island and Mainland—To operate line between...	The Bell Telephone Co.	Jan. 31, 1889	20% comm.
Victoria to Cape Beale ( <i>via</i> Bonilla Point)—Building line between .....	T. D. Conway .....	June 28, 1889	95 00
Wolfe and Howe Islands Cables—Building land lines in connection with .....	North American Tel. Co	Jan. 21, 1889	pr. stat. mile 1,000 00

F. X. R. SAUCIER.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 2nd September, 1889

No. 2.—STATEMENT of Property purchased or sold by the Department of Public Works, during the Fiscal Year ended 30th June, 1889.

Date of Conveyance.	Vendors.	Purchasers.	Description of Property.	For What Purpose.	Area.	Price.
July 16, 1888.	Archbishop R. C. Corporation of Quebec.	Her Majesty	Site of old Parliament Building, Mountain Hill, Quebec.	Release of <i>rente constituée</i> .	100 ft. by 150 ft.	\$ 74,074 00
do 18, 1888.	W. H. Plummer <i>et ux.</i>	do	Land and water lot, Sault Ste. Marie.	Wharf.	100 ft. by 80 ft.	1 00
Aug. 3, 1888.	Her Majesty.	Ven. E. Gilpin.	Old Halifax Penitentiary buildings and grounds.	No longer required by Department.	48 ft. by 38 ft. 8 in.	10,000 00
July 27, 1888.	Mrs. Elizabeth Smart.	Her Majesty	Part of Cadastral Lot No. 283, Lachine, Que.	Site for public building.	100 ft. by 150 ft.	2,000 00
Aug. 15, 1888.	John Clarke.	do	Parcel of land at Brampton, Ont.	do	48 ft. by 38 ft. 8 in.	4,000 00
July 7, 1888.	Rev. P. Gladu, O. M. I. and Lake Temiscaming.	do	Wharf and part of lot 20, 2nd range, Township Dehamel.	Harbour and river works.	100 ft. by 80 ft. 6 in.	3,000 00
Aug. 20, 1888.	Her Majesty.	Corporation of Town of Goderich	Lot west of Beach Street and south of harbour quay.	Compensation for claim.	5,670 sq. ft.	Special grant
Sept. 27, 1888.	Helen H. Coates.	Her Majesty	Land in Almonte, Ont.	Site for public building.	72 ft. by 81 ft. by 108-75 in.	6,250 00
Oct. 5, 1888.	Ann McLaurin.	do	Mortgage on lot corner of Metcalfe and Wellington Streets, Ottawa.	Discharge of mortgage.	4,000 00	4,000 00
Aug. 28, 1888.	Ed. Caron.	do	Beaumont, Que., wharf.	Harbour and river works.	800 00	800 00
Oct. 1, 1888.	C. E. Dawson.	do	Tug "M. P. Davis"	Dredging.	2,000 00	2,000 00
July 23, 1888.	P. Holt & W. Proudfoot.	do	Part of lots 21, 22 and 23, block 59, Brandon, Man.	Site for public building.	75 ft. by 63 ft.	3,150 00
Aug. 10, 1888.	Scottish Ont. and Man. Land Co.	do	do	do	2,240 00	2,240 00
Nov. 16, 1888.	G. S. Brush.	do	Tug "Sensation"	Dredging.	90 ft. by 60 ft.	2,600 00
do 2, 1888.	Wid. Adeline McKellar.	do	Lots 1, 2 and 3, Strathroy, Ont.	Site for public building.	1st parcel 127,661 sq. ft.	2,400 00
do 30, 1888.	J. Carnuthers and Corporation of the City of Kingston.	do	Two parcels of land, Kingston, Ont.	Kingston dry dock.	2nd parcel 151,567 sq. ft.	19,500 00
Mar. 27, 1888.	Hon. F. Clemow <i>et ux.</i> & J. Clarke <i>et ux.</i>	do	East ½ of Lot No. 12, south side Queen St., Ottawa.	Fisheries exhibition building.	33 ft. by 99 ft.	1 00
Oct. 27, 1888.	Hon. D. A. Smith & R. B. Angus.	do	Parts of lots 6, 7, 8, 9 and 10, block 32, Vancouver, B.C.	Site for public building.	9,750 sup. ft.	4,000 00
July 12, 1888.	J. W. Peppett <i>et ux.</i>	do	Strip of land corner Main and Peppett Streets, North Sydney, C.B., N.S.	To complete site for public building.	675 sup. ft.	97 50

No. 2.—STATEMENT OF PROPERTY purchased or sold by the Department of Public Works during the Fiscal Year ended 30th June, 1889—Continued.

Date of Conveyance.	Vendors.	Purchasers.	Description of Property.	For what Purpose.	Area.	Price.
Sept. 10, 1888.	Exchequer Court.	Her Majesty	Part N $\frac{1}{2}$ lot 8 and S $\frac{1}{2}$ lot 8, Township of Portland, County of Ottawa.	River du Lièvre works.		\$ cts.
Jan. 15, 1889.	Kilbourn & Lymburner.	do	Parts of Park lot X, N. of Bury Street and A B C and portions of 1 and 2.	Owen Sound Harbour improvements.		6,000 00
do 15, 1889.	C. Paynter, jun., <i>et ux</i>	do	Lot No. 3 and N $\frac{1}{4}$ of lot No. 2.	do		1,806 00
do 15, 1889.	J. C. Griffiths <i>et ux</i>	do	Lots 1, 2 and 3 and parts of lots 6 and 7 sub-divisions of lot VIII.	do		561 00
do 18, 1889.	Goldie & McCulloch <i>et al.</i>	do	Part of S E part lot 11, West Street.	do		7,500 00
do 15, 1889.	C. Paynter, sen. <i>et ux</i>	do	Lot 1 and S $\frac{1}{2}$ lot 2, N of Paynter Street.	do		900 00
do 15, 1889.	J. Corbet <i>et al.</i>	do	Piece of land, eastern portion of lot XI.	do		928 00
June 20, 1889.	J. Lemon.	do	Lot 4, sub-division lot VIII.	do		1 00
Jan. 13, 1889.	Mrs. D. Earl	do	Parts of lots 3 and 4, sub-division lot IX.	do		5,250 00
do 15, 1889.	Mrs. Creighton and Mrs. Earle.	do	do 8 and 9 do VIII	do		100 00
Mar. 19, 1889.	O. Chalifoux.	do	Lot 525 and part of lot 524, St. Hyacinthe, Que.	Site for public building.		600 00
do 20, 1889.	Pickels & Mills	do	Lot corner Main and Railway Sts, Annapolis, N.S.	do	482 $\frac{1}{2}$ by 47 $\frac{1}{2}$ by 50 ft.	6,500 00
do 20, 1889.	J. Buckler <i>et ux</i>	do	Piece of land adjoining preceding one.	To complete above site.	15 feet wide.	3,300 00
do 26, 1889.	Mrs. widow G. Pelletier.	do	Cadastral lots 266 (one parcel) and 267 (two parcels) at Fraserville, Que.	Site for public building.	22,500 sup. ft.	3,500 00
do 26, 1889.	The Lake Temiscamingue Colonization Ry. Co.	do	Long Sault Wharf and parcel of land in connection therewith.	Harbours and Rivers Works	Piece of land 50 ft. by 100 ft.	800 00

F. X. R. SAUCIER.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 2nd September, 1885,

Date of Lease.	Lessor.	Lessee.	Property Leased	For what purpose used.	Duration of Lease.	Rent Payable.
Sept. 1, 1888	J. M. Cairns	Her Majesty	Town lot No. 13, N. side of James street, Prescott, Ont.	Post Office contract	1 year	\$ cts. 1 00 p. annum
Feb. 8, 1889	Her Majesty	North American Telegraph Co.	Bath and Amherst Island Telephone Line.	Operation of the same	21 years	1 00 do

F. X. R. SAUCIER.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 2nd September, 1889.





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APPENDIX No. 16.

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LIST OF SOME OF THE ACTS OF PARLIAMENT  
PASSED AT THE SESSION OF 1889,  
AND HAVING REFERENCE TO  
THE DEPARTMENT OF PUBLIC WORKS,  
OR WORKS UNDER ITS CHARGE.

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## APPENDIX No. 16.

Ref. No. 101,487.

LIST of some of the Acts, passed at the Third Session of the Sixth Parliament of Canada, prorogued on the second day of May, 1889, and having reference to the Public Works Department, or works under its charge.

Subject.	Full Title of the Statute.	Chapter.	Page in Statute Book.
Sums granted to Her Majesty for the financial year ending 30th June, 1890, and the purposes for which they are granted.	An Act for granting to Her Majesty certain sums of money required for defraying certain expenses of the public service, for the financial years ending respectively the 30th June, 1889, and the 30th June, 1890, and for other purposes relating to the public service.	1	3
Relief of the Corporation of the Town of Cobourg (Port Hope) Rice Lake Road.	An Act for the relief of the Corporation of the Town of Cobourg.	6	58
Expropriation of lands.....	An Act respecting Expropriation of Lands.....	13	74
Collection of slidage and boomage dues.	An Act respecting the collection of certian Tolls and Dues therein mentioned.	19	103

N.B.—Order in Council, 11th February, 1889, determines how the “day” shall be reckoned in connection with the management and working of the Graving Dock at Esquimalt, B.C.—page xcvi.

F. X. R. SAUCIER.

DEPARTMENT OF PUBLIC WORKS,  
OTTAWA, 9th September, 1889.



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APPENDIX No. 17.

—  
NATIONAL ART GALLERY.

—  
CURATOR'S REPORT.

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## APPENDIX No. 17.

## NATIONAL ART GALLERY.—CURATOR'S REPORT.

Ref. No. 103,873.

NATIONAL ART GALLERY,  
OTTAWA, 27th November, 1889.

SIR,—I have the honour to report the following additions to the Gallery received during the fiscal year ended 30th June, 1889:—

Water color, "British Columbian Forest," by L. R. O'Brien, P.R.C.A.

Water color, "A Wanderer in the Wood Lands," by D. Fowler, R.C.A.

Oil painting, "Landscape," by Franklin Brownell.

The above pictures were purchased by the Government.

The interest taken in the Gallery by the public is shown by the attendance book, no less than 14,241 visitors having registered their names during the year.

I have the honor to be, Sir,

Your obedient servant,

A. GOBEL, Esq.,  
Secretary, Department of Public Works,  
Ottawa.

JOHN W. H. WATTS,  
*Curator.*





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**APPENDIX No. 18.**

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**OFFICERS OF THE DEPARTMENT.**

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## APPENDIX

**Members, Commissioners and Assistant Commissioners of the Board of Works,  
Architects of the Department of**

Chairman, Commissioners and Ministers.			Assistant Commissioners and Deputy Ministers.	
Name.	From	To	Names.	Date of Appointment.
<i>Under Statute 4-5 Vic., Cap. 38, Corporation of Board of Works.</i>				
Hon. H. H. Killaly, Chairman.....				
<div>D. Daly.....</div> <div>S. B. Harrison.....</div> <div>J. Davidson.....</div>	Dec. 29, 1841	Oct. 3, 1844		
<i>New Board of Works.</i>				
Hon. H. H. Killaly, Chairman.....				
<div>D. Daly.....</div> <div>W. H. Draper.....</div> <div>W. Morris.....</div> <div>D. B. Papineau.....</div>	Oct. 5, 1844	June 8, 1846		
<i>Under Statute 9 Vic., Cap. 37, etc.</i>				
Hon. W. B. Robinson, Chief Commissioner.	July 4, 1846	Mar. 10, 1848	Hon. Chas. Eus. Casgrain, Assist. Commissioner.....	Aug. 1, 1846
E. P. Taché do ..	Mar. 11, 1848	Nov. 26, 1849	Hon. M. Cameron, Asst. Commissioner.....	Mar. 11, 1848
J. Chabot do ..	Dec. 15, 1849	Mar. 31, 1850	Jno. Westenhall, Asst. Commissioner.....	Feb. 2, 1850
W. H. Merritt do ..	April 20, 1850	Feb. 11, 1851	Hon. Jos. Bourret, Asst. Commissioner.....	April 20, 1850
J. Bourret do ..	Feb. 15, 1851	Oct. 27, 1851	Hon. H. H. Killaly, Asst. Commissioner.....	Feb. 15, 1851
John Young do ..	Oct. 28, 1851	Sept. 22, 1852		
J. Chabot do ..	Sept. 23, 1852	Jan. 26, 1855		
F. Lemieux do ..	Jan. 27, 1855	Nov. 25, 1857		
C. Alleyn do ..	Nov. 28, 1857	Aug. 1, 1858		
L. H. Holton do ..	Aug. 2, 1858	do 6, 1858		
L. V. Sicotte do ..	do 6, 1858	Jan. 10, 1859	Samuel Keefer, Asst. Commissioner.....	May 6, 1859
John Rose do ..	Jan. 15, 1859	June 12, 1861		
Jos. Cauchon, Commissioner do ..	June 15, 1861	May 23, 1862		
U. J. Tessier do ..	May 24, 1862	do 27, 1863		
L. T. Drummond do ..	do 28, 1863	July 23, 1863		
M. Laframboise do ..	July 23, 1863	Mar. 29, 1864	Toussaint Trudeau, Asst. Commissioner.....	Mar. 15, 1864
J. C. Chapais do ..	Mar. 30, 1864	June 30, 1867		
<i>Under Statute 31 Vic., Cap. 12.</i>				
Hon. Wm. McDougall, Minister....	July 1, 1867	Oct. —, 1869	Toussaint Trudeau, Deputy Minister..	May —, 1868
Hon. H. L. Langevie, C.B. do ....	Dec. 8, 1869	Nov. 5, 1873		
Hon. Alexander Mackenzie do ....	Nov. 7, 1873	Oct. 16, 1878		
Sir Charles Tupper, C.B., K.C.M.G., Minister.....	Oct. 17, 1878	May 20, 1879		
Sir Hector L. Langevin, C.B., K.C.M.G., Minister.....	May 20, 1879		G. F. Baillairgé, Deputy Minister..	Oct. 4, 1879

## No. 18.

and of the Ministers, Deputy Ministers, Secretaries, Chief Engineers and Chief Public Works, from 1841 to 1889.

Secretaries.		Chief Engineers.		Chief Architects.	
Names.	Date of Appointment.	Names.	Date of Appointment.	Names.	Date of Appointment.
Thomas A. Begly...	Aug. 17, 1841	Samuel Keefer...	Aug. 17, 1841	F. P. Rubidge, Architect and Asst. Engineer...	Dec. 15, 1841
Thomas A. Begly, under Act estab- lishing Dept. of Public Works.....	Sept. 25, 1847				
.....		John Page .....	Oct. 31, 1853		
Toussaint Trudeau...	Dec. 13, 1859				
Frederick Braun....	Mar. 8, 1864				
.....		G. F. Baillarge, Asst. Chief En- gineer.....	July 5, 1871	Thos. S. Scott....	Feb. 7, 1872
{ S. Chapleau ..... Oct. 4, 1879 F. H. Ennis..... Nov. 4, 1880 A. Gobeil..... Jan. 23, 1885		H. F. Perley.....	Nov. 25, 1880	Thos. Fuller.....	Oct. 31, 1881



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APPENDIX No. 19.

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REVISED RECORD,  
ENGINEERS AND THEIR ASSISTANTS EMPLOYED  
ON  
PUBLIC WORKS,  
CANADA,  
1779 to 1890.

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N.B.—This Record does not contain the names of the  
Government Railway Engineers.

An Alphabetical Record of the most important Works on which Engineers have  
reported, or been employed, will be published in a subsequent report.

G. F. BAILLAIRGÉ,  
*D. M. P. W.*

OTTAWA, December, 1889.



# APPENDIX No. 19.

## ENGINEERS

Employed on Public Works, Canada, 1779 to 1890, so far as ascertained, exclusive of Railways.

Engineers.	Works.	Dates of Employment, &c.
Allison, J. C. ....	Assistant Engineer, Harbours, Maritime Provinces. . . . Resident Engineer, St. John, N.B., Works and Surveys, King's, Annapolis, Digby, Yarmouth, Shelburne, Queen's, and Lunenburg Counties, Nova Scotia. ....	Oct., 1883-88. July, 1889-90.
Anderson, W. P. ....	Chief Engineer, Department of Marine and Fisheries. . . . Member Canadian Society of Civil Engineers. ....	23rd Oct., 1874-89. 20th Jan'y., 1887.
Armstrong, Capt. Charles Logie. ....	Lake St. Peter, dredging, &c. ....	1857-67.
Arnoldi, John Roger. ....	Chief Mechanical Engineer. .... Superintendent dredge vessels and dredging, Ontario and Quebec. .... Mechanical Engineer, Public Buildings, Ottawa, &c. .... Member Canadian Society of Civil Engineers. ....	6th Dec., 1859. 1890-89. 7th July, 1883-89. 25th June, 1887.
Asterbrooks, Captain. ....	Engineer Royal Artillery, first attempt to place a cable for Suspension Bridge at Ottawa. ....	1826.
Atherton, Charles. ....	Lake St. Peter, dredging, in charge of surveys and inves- tigations. .... Specification of dredge vessels, &c. ....	1842-43. 9th Sept., 1842.
Austin, G. F. ....	Chantry Island breakwater, Lake Huron, &c. .... Harbour surveys, Maritime Provinces. .... River Ottawa bridge site survey at Portage du Fort, &c. ....	1875-82. 1883-84. 1885-86.
Aylmer, J. A. ....	Lachine Canal enlargement, engineering staff. .... St. Anne Lock do. .... Resident Engineer, new locks and canals, River Trent— construction. .... Member Canadian Society of Civil Engineers. ....	July, 1873-79. do 1880-81. June, 1882-88. 20th Jan'y., 1887.
Baddeley, Capt., R.E. ....	Commissioner with Hon. John Macaulay, Surveyor General, and John S. Cartwright, under Act of Upper Canada Parliament, for ascertaining practicability of making a navigable communication between the Ottawa and Lake Huron. .... They reported to Sir George Arthur, subjoining thereto the report of David Taylor, David Thompson and William Hawkins, the per- sons they employed to survey the route. See subsequent reports on surveys by Walter Shanly and James Stewart, in 1857-58, and by Thomas C. Clarke, 1859-60. See Appendix 30, pages 837 to 847, by G. F. Bail- laire in General Report of Public Works, 1867-82.	4th March, 1837.
Baillairgé, Charles. ....	Architect and Engineer, Public Works, Quebec and Ottawa Report on new gaol, Quebec. .... Joint Architect, Ottawa Parliament Buildings. .... City Engineer, Quebec. .... New treatise on Stereometry. First medal of Society of Arts and Manufactures, Paris, and thirteen medals awarded by Russia, Spain, Italy, &c., 1874 to 1884. ....	1860-63. 11th Feb., 1863. 1863-65. 6th Oct., 1866-90. 15th March, 1874.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Baillairgé, Charles.....	Princess Louise Docks, Quebec, plans submitted, &c..... Inspecting Engineer North Shore Railway, Quebec to Montreal, and Piles Branch, River St. Maurice..... Fellow Royal Society of Canada..... Member of Canadian Society of Civil Engineers..... Inspecting Engineer of Quebec and Lake St. John Railway for Municipal Council of Quebec..... Member of the Society of Sciences, Arts and Manufactures, London, Eng..... Member of "l'Académie des Palmiers," France.....	1874-76. 1875-81. 7th March, 1882. 24th Feb., 1887. 1883-89. Dec., 1886. 12th May, 1889.
Baillairgé, George Fred..	Canals, harbours, roads, Provinces of Quebec and Ontario.. First General Report on Public Works, with James Stewart, C.E..... Laid out the first slides built on the River St. Maurice, at Grand'Mère and Shawenegan Falls..... Surveys—Piers below Quebec, River l'Assomption, &c..... Resident Engineer, Junction and Williamsburg Canals..... Ordnance canals, survey and plans of hydraulic lots at Cascades, Split Rock, Cedars, and Côteau du Lac, with estimates..... Chambly and Beauharnois Canals, surveys and claims..... Saguenay, Metapediac, Gaspé and Temiscouata Roads, &c..... Second General Report on Public Works..... Cornwall, Beauharnois Canal weirs, &c..... Channel sounded, River St. Lawrence, between Quebec and Montreal..... Baie Verte Canal Survey, proposed route and design..... Location and design of lock, Lakes Muskoka and Rousseau. Slides and booms, Rivers Saguenay, St. Maurice and Trent Assistant Chief Engineer Public Works, Canada..... Proposed Cedars Canal and River St. Lawrence survey..... Fort Frances Lock, Rainy Lake, and survey harbour works, Quebec..... Superintending Engineer Canals, Province of Quebec..... Deputy Minister Public Works, Canada..... Third General Report on Public Works..... New Map of Canada, showing its resources, climate, &c., &c., and comprising the various Arctic discoveries up to..... Classified collections of specifications of the Public Works of Canada, chiefly from..... Member of Council, Canadian Society of Civil Engineers..	22nd Sept., 1844. Up to 1849. Sept.-Oct., 1852. 1846-1853. 1853-1856. 1857. 1849-1864. 1846 to 1866. 1st July, 1867. 1856-1870. 1868-1869. Aug., 1870-73. June, July, 1866. 1863-78. 5th July, 1871-79. 1872-78, 1875-76. 1875-76. 22nd June, 1877-79. 4th Oct., 1879-90. 1867-82. 1890. 1841 to 1890. 1889-90.
Baird, N. H.....	Member of Mechanics Institute of Civil Engineers, England Projected Murray Canal, Lake Ontario..... Report on Beauharnois Canal project..... do on River Trent navigation project..... Locks 134 by 33 feet; 5 feet water on sills. Work commenced 1837, and completed chiefly in 1844.. do on Welland Canal enlargement..... Work commenced 30th November, 1824. Canal first opened 30th November, 1829. Original wooden locks 110 by 22 feet, with 7½ feet of water on sills. Died, Aug., 1849, at Brattleboro', Vt. Reports on Roads and Bridges, Eastern Townships, P.Q....	1831. 1833. 1835. 1833-36. 1837. 1837. 1846-47-48.
Barclay, E. J.....	Engineering Staff, St. Peter's Canal enlargement, Cape Breton.....	1875-81.
Barrett, Alfred.....	Report on inland navigation between Lakes St. Francis and Ontario, also on Rapide Plat Canal project..... Grand River Navigation—Report..... Lachine Canal, 1st enlargement, and St. Ours lock and dam, &c..... Surveys River St. Charles and bridges, River Ottawa, at Vaudreuil, &c. Died, 18th July, 1849, at Montreal....	1830. 7th Oct., 1843. 1841. 1843-48.



## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Barry, P. J. S. ....	Royal Engineer Corps. Report and estimate proposed St. Peter's Canal, Cape Breton, N.S. Canal commenced by Nova Scotia Government. do completed by Dominion Government. This canal connects Great Bras d'Or Lake and St. Peter's Bay, on the Atlantic. It is 2,400 feet in length, and has 1 tidal lock of 200 × 49½ × 18 feet depth of water on sills of lock, which has 4 gates. It was enlarged by Dominion Government, 1875 to 30th April, 1871. Cost of construction..... \$156,523 32, to 30th June, 1867. Cost of completion and enlargement 496,797 80, to 30th June, 1882. Total..... \$653,321 12 (See General Report, Public Works, 1867-82.)	31st Aug., 1853. 1854. 5th Aug., 1869.
Bayfield, Admiral Henry W., R.N. ....	In charge of the Admiralty Survey of the River and Gulf of St. Lawrence. Made reports respecting the deepening of Lake St. Peter.	1817-60. 1831-35-46.
Beaudry, J. A. U. ....	Engineering Staff, Public Works, harbour surveys, P.Q. Member Canadian Society of Civil Engineers.	1883. 20th Jan., 1887
Bélanger, Ernest. ....	Assistant Engineer, harbour surveys, P.Q.	1884-87.
Belcher, A. J. ....	Assistant Engineer, new canal works, River Trent	1882-88.
Belcher, Thos. Deaves...	Superintending Engineer, River Trent, canals, locks, slides, dams and booms, from Trenton, Lake Ontario, up to Lake Scugog.	July, 1873, to 1884.
Bell, Andrew. ....	New Carillon Canal on north side, also new slide on south side of the River Ottawa, and dam across the River Ottawa, Resident Engineer. Employed by various parties, Arnprior, &c.	June 1870, to Nov. '85 1885-1889.
Bell, Capt. ....	Superintending dredging ship channel, Lake St. Peter. Died fall of 1856.	1852-56.
Bellingham, A. ....	Assistant Resident Engineer, Lachine Canal, third enlargement, upper division. Left service 1st October, 1878.	1873 to 1878.
Bender, E. P. ....	Engineering Staff, Public Works, harbours, Province of Quebec, &c.	1880 to 1887.
Bennett, William. ....	Resident Engineer, Esquimalt Graving Dock, Vancouver Island, British Columbia. Member Canadian Society of Civil Engineers.	1st Sept., 1883, to Jan., 1888. 24th Feb., 1887.
Berlinguet, Thos. ....	First employed on survey Princess Louise Docks at Quebec. Survey, Harbour of Three Rivers, &c., P.Q. Assistant, Hydrographic Survey, Pointe aux Trembles to Cap Charles. Resident Engineer, River St. Maurice, and Engineer Harbour Commissioners, Three Rivers, &c. Resident Engineer, lock and dam, River Yamaska, and various works at Sorel, River St. Francis, River Nicolet, &c. Member Canadian Society of Civil Engineers.	1875-76. 1881-82. July, 1883. 1884-89. 1889-90. 24th Feb., 1887.
Bertrand, Joseph Tétu..	Engineering Staff, Public Works, Ottawa, and harbour surveys, etc. Student Canadian Society of Civil Engineers.	1884-89. 20th Jan., 1887.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Bertrand, L. N.....	Engineering Staff, Public Works, surveys, Quebec and Ontario.....	1884.
Boivin, Elzéar.....	Harbour Survey, S. W. side, Lake St. John, P. Q.....	1889.
Bolton, Major D., R. E..	Description of dam at Long Island, on the Rideau Canal, built in 1836 .....	1839.
Boswell, St. G.....	Engineering Staff—Graving dock at Lévis, and Princess Louise Basins, at Quebec.....	1876-88.
	Member of Council, Canadian Society of Civil Engineers..	1889.
	Resident Engineer, Quebec Harbour Works.....	1889.
Boulay, Philéas.....	Engineering Staff, canals, &c.....	15th March, 1870-71.
	Assistant, Cedars' canal survey.....	1872-76.
	Lachine Canal enlargement.....	1877-80.
	At head-quarters, Department Railways and Canals, &c..	1880-89.
Boyd, John Edward ...	Resident Engineer, European and North American Railway, by Government of New Brunswick.....	1856-60.
	Chief Engineer and General Superintendent of E. and N.A. Railway.....	Dec. 1860-67.
	Assistant Engineer, Department Public Works, Ottawa.....	1st Sept., 1867-71.
	Chief Engineer of Government Railways, Prince Edward Island.....	10th May, 1871-75.
	Resident Engineer, North Shore Railway, by Government of Quebec.....	1876 and 1879.
	Engineer in charge of works, Maritime Provinces.....	May, 1880, to June, 1881.
	Engineering Staff at Head-quarters, Ottawa.....	1881-83.
	Resident Engineer, Princess Louise Basin, Quebec, and graving dock at Lévis, for Public Works Department. Died at Quebec and interred at Ottawa, Nov., 1887	Sept., 1883, to Nov., 1887.
Breen, Thomas.....	Engineering Staff, Public Works, harbours, &c., Province of Quebec.....	1882-89.
	Member Canadian Society of Civil Engineers.....	25th June, 1887.
Brophy, G. Patrick.....	Engineering Staff, Public Works.....	July, 1867.
	Assistant Superintendent, Ottawa slides and booms.....	6th July, 1873.
	Superintendent do do.....	22nd July, 1875-89.
	J. B. Brophy acted as Superintendent, 1st July, 1879, to 1880.	
Brophy, John Byrne ...	Assistant Superintending Engineer, Ottawa slides and booms.....	1st Jan., 1876.
	Superintending Engineer, Ottawa slides and booms.....	1st July, 1879.
	Resident Engineer on C.A.—C.P.C. Railway Division....	1st April, 1880.
	Divisional Engineer, Cape Breton Railway.....	28th June, 1886.
Brotherton, A. S.....	Engineering Staff, Public Works, harbour surveys, &c., below Quebec.....	1881-82.
Browne, Edward.....	Report on back-waters, Newcastle District.....	18th Feb., 1858.
Brown, Gustavus A.....	Assistant Engineer, Public Works, Maritime Provinces... Resident Engineer, St. John, N.B., Public Works and surveys, Prince Edward Island, and the Counties of Cumberland, Colchester, Hants and Halifax, Nova Scotia .....	1st July, 1872-88.
Br...		July, 1889-90.
Bry...	Report on claim in connection with Saut-Ste.-Marie Canal, constructed on Canadian territory prior to 1802, by Messrs. McTavish, Frobisher & Co., on behalf of the "North-West Fur Trading Company".....	Prior to 23rd Dec. 1803.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Bruyères, Capt., R.E....	This claim was made by Messrs. Forsyth, Richardson & Co., and by Messrs. Parker, Gerrard, O'Gilvy & Co., of Montreal, 15th April, 1802, and by John Mure, of Quebec, 17th April, 1802. Report on progress of new canal at Cascades, to replace the two first canals built, on the same peninsula, between 1779 and 1783 ..... See Report Canadian Archives, by Douglas Brymner, Ottawa..... See By, Clarke, Donatti, Finlay, Mann, King and Twiss, herein.	16th Jan., 1805. 1886.
Burnett, Thomas.....	British Engineer, made survey and plans of Lachine Canal. Canal commenced, 17th July, 1821. do opened in August, 1824. Depth, $4\frac{1}{2}$ feet water on lock sills. Stone locks, 100 by 20 feet.	Spring of 1820.
Burwell.....	Survey of Goderich Harbour.....	1827.
By, Lieut.-Col., R.E....	Report on Cascades, Mill Rapids and Split Rock Canals.. Superintending Engineer of Rideau Canal, Bytown (Ottawa) to Kingston..... Rideau Canal, commenced..... Report on Canadian canals and defences of Canada..... do on the Rideau Canal..... First steamboat "The Plumper" passed through the Rideau Canal..... Rideau Canal completed..... 126 $\frac{1}{2}$ miles long, with 47 locks of 134 by 33 feet, and 5 feet water on sills of locks. Total ascent from Ottawa to Upper Rideau Lake, 292 feet 3 inches. Total descent from Upper Rideau Lake to Kingston, 165 feet 4 inches. Ottawa River, below Lake Ontario, per Royal Engineers, 126 feet 11 inches. Ottawa River, above the sea, 110 feet. Total cost of Rideau Canal, according to Ordnance documents, including cost of land and pay of establishment, \$3,911,701.47. The Rideau Canal was under the superintendence of the following Royal Engineers, until it was transferred by the Imperial to the Canadian Government, viz. :— Major Bolton, Lieut.-Col. Thompson, Lieut.-Col. Ford, Lieut.-Col. Chater and Mr. Harvey.... The management of the Ottawa and Rideau Canals was transferred to the Department of Public Works by an Order in Council..... J. S. Killaly, first Superintending Engineer, appointed by Canadian Government..... J. D. Slater, second Superintending Engineer, appointed by Canadian Government..... F. A. Wise, third Superintending Engineer, appointed by Canadian Government.....	24th April, 1805. Sept., 1826. 21st Sept., 1826. 1826. 6th July, 1827. 29th May, 1832. Aug., 1832. 1832 to 1857. 3rd March, 1857. 1857 to 1858. Oct. 1858 to Oct., 1872 Oct. 1872-1890.
Carroll, Cyrus.....	Engineering Staff, Public Works, harbours, Ontario.....	1884-86.
Cartwright, John S., R.E.	Commissioner with Hon. John Macaulay, Surveyor General of Upper Canada, and Capt. Baddeley, R.E., for ascertaining practicability of a navigable route between the Ottawa and Lake Huron..... See Baddeley, Hawkins, Macaulay, Taylor, Thompson, according to an Act of the Parliament of Upper Canada, of 4th March, 1837. See App. 30, pp. 837 to 847, by G. F. B., Public Works Report, 1867-82.	1837.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Casey, W. R. ....	Sub-Engineer on the Germantown and Philadelphia Railway and on the New York Crofton Water Works. .... Assistant Engineer on the Long Island Railway, N.Y. .... do Chambly Canal. .... Chief Engineer of Railway, St. John to Laprairie, from its commencement to its completion ..... This was the first narrow-gauge railway constructed in Canada, its rails were of flat iron ; passenger cars resembled those now used but shorter and narrower. Made numerous surveys both as Assistant and Chief Engineer in various parts of Upper and Lower Canada and several of the United States ..... Cedars Canal route proposed on north side of River St. Lawrence. Plan, profile and estimate. ....	Prior to 1834. do 1834. 1834-36. Prior to 1842. 1842.
Chaloner, Charles E. ....	Public Works, surveys, Manitoba and North-West Territories, &c. .... Assistant of R. Steckel, Geodetic survey, River St. Lawrence, between Montreal and Quebec, and River Richelieu, &c. .... Member Canadian Society of Civil Engineers. ....	1882-83. 1884-89. 24th Feb., 1887.
Champion, A. J. ....	Engineering Staff, Public Works, Maritime Provinces ....	1873-74.
Charbonneau, Maxime ..	Engineering Staff, Public Works, Manitoba and North-West Territories, River North Saskatchewan. .... Died February, 1887.	1885-86.
Chater, Col. ....	Royal Engineer, succeeded Col. Ford, R.E., as Superintending Engineer of Rideau Canal, under Imperial Government.	
Cimon, Simon ....	Engineering Staff, Public Works, harbours, Quebec. .... Resigned 11th Aug., 1887. Elected member of Charlevoix for House of Commons, 23rd Sept., 1887. Member Canadian Society of Civil Engineers. ....	1881-87. 20th Jan., 1887.
Clark, C. ....	Engineering Staff, New Canal Works, River Trent. ....	1882 to 1886.
Clarke, Isaac Winslow ..	Deputy Commissary General. Superintendent, Cascades, Split Rock and Côteau du Lac, Ordnance canals. .... Died 7th July, 1822. For details respecting these works, see Col. Gother Mann and Lieut. Col. John By, &c., also General Report on Public Works, 1867. These canals were not built under the French, as stated according to tradition at that time.	1809-22.
Clarke, Thomas C. ....	Ottawa River navigation to Lake Huron, survey. .... Report on projected ship canal. ....	1859. 2nd Jan., 1860.
Cliff, John. ....	Superintendent harbour works, Montreal. ....	1832 to 1845.
Clowes, Samuel. ....	Rideau Canal, proposed works ..... do Welland Canal ..... Galops, Rapide Plat, Farran's Point and Cornwall Canals, General Report and Estimates submitted .....	1823. 1824. 1826.
Cole, Capt., R.E. ....	Consulting Engineer, Cornwall Canal construction ..... Canal commenced in 1835, opened December, 1842. Completed June, 1843.	1833.
Cole, Major P., R.E. ....	Report on causes of floods, River St. Lawrence, Montreal. ....	29th June, 1841.
Conway, John. ....	Engineering Staff, Lachine Canal enlargement .....	1871-83.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Conway, John.....	Assistant Engineer, St. Gabriel Basin, L.C..... Engineer, electric light apparatus, Lachine Canal, Montreal.....	1883-86. 1886-89.
Cornell, J.....	Engineering Staff, Public Works, at Montreal, Lachine Canal enlargement.....	1843-47.
Coste, Louis.....	Engineering Staff, Pub. Wks., Harbours, &c., Prov. Ont. and Quebec..... Member Canadian Society of Civil Engineers.....	1884-89. 20th Jan., 1887.
Coutlée, Chas. R. F.....	Graduated at Royal Military College, Kingston, Ontario..... Engineering Staff, Canadian Pacific Railway..... Engineering Staff, International Railway. Short Line of C.P.R., from Montreal to Province Line, thence across State of Maine to New Brunswick..... Student Canadian Society of Civil Engineers..... Engineering Staff, projected canal, Lake St. Francis to Lake St. Louis.....	June, 1886. Oct., 1886, to Feb., 1887. May, 1887; to Oct., 1888. 22nd March, 1888. 1st May, 1889-90.
Crawford, William.....	Survey, Beauharnois Canal, enlargement projected..... Assistant Engineer, Welland Canal, deepening to 14 feet..... Resident Engineer Saut-Ste.-Marie Canal, Canada..... First survey made in 1852, by S. Keefer, Chief Engineer of Public Works. Member Canadian Society of Civil Engineers.....	1872 to 1876. 1st June, 1886, to 1st August, 1887. August, 1887-88. 20th Jan., 1887.
Crawley, Capt. H. O., R.E.	Reports on Baie Verte Canal project, to unite the Bay of Fundy with the Gulf of St. Lawrence.....	19th Jan., 1843, and 14th and 19th Mar., 1843.
Cunningham, Granville C.	Resident Engineer, Prince Edward Island Railways, Assistant Engineer in charge of harbours, &c., Prince Edward Island, for Public Works Department..... Member of Council Canadian Society of Civil Engineers.....	April, 1875 to 1878. 1889.
Curran, Veysie.....	Assistant Resident Engineer, Southern Division, Welland Canal enlargement..... Asst. Resident Engineer, Saut-Ste.-Marie Canal, Canada.....	Nov., 1873, to 1st Jan., 1889. 1st March, 1889.
D'Amours, J. W.....	Engineering Staff, Public Works, British Columbia, Victoria, &c. Survey mouth of Fraser River, British Columbia.....	1885.
Dawson, Simon J.....	River St. Maurice, slides and booms..... Route Lake Superior to Fort Garry, survey commenced..... Work commenced..... Col. Wolseley and troops passed..... Work completed for passage of immigrants.....	1852-57. 1857. 1867. 1870. 1871.
Déniel, Emile.....	Grenville Canal enlargement..... Panama Canal, Central America..... Member Canadian Society of Civil Engineers..... Chief Assistant of Thos. Monro. Examination of projected canal routes, Lake St. Francis to Lake St. Louis.....	Sept., '72, to Oct., '80. Jan., Feb., March, 1888. 20th Jan., 1887. 1889.
Denison, Lieut W., R.E.	Description of Rideau Canal dams, locks, &c., and of bridges across the River Ottawa.....	1839.
Dérome, J. B.....	Piers, &c., Province of Quebec, Public Works Department.	10th July, 1864.
Derbishire, Stewart.....	Engineering Staff, employed on harbours and roads.....	1873-77.
Desbarats, G. J.....	Carillon New Canal, slide and dam, River Ottawa..... Headquarters, Department of Railways and Canals, Ottawa	Aug., 1879. Jan., 1885-89.

ENGINEERS employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Des Brisay, L. P. W. ....	Engineering Staff, Public Works, Calgary, Bow River bridge	18th March, 1887, to 30th April, 1888.
Desjardins, C. ....	On survey ship channel between St. Roch and Ile aux Cou-dres .....	1881.
Dickinson, John .....	Appointed Commissioner to enquire into cause of floods between Montreal and Quebec. ....	4th Oct., 1873.
Dickinson, Jos. E., M.A., Trinity College, Dublin	Assistant Engineer, Northern Division, Welland Canal, 2nd enlargement. .... Died in Europe.	15th July, 1874, to 30th Dec., 1879.
Donatti, L. ....	Deputy Assistant Commissary General. Superintendent, Cascades, Split Rock and Côteau du Lac Ordnance Canals. .... For details, see Bruyères, By, Clarke, Mann, Twiss, &c.	July, 1820.
Doré, J. E. ....	Engineering Staff, canals, &c., P. Q. .... St. Zotique road dyke, protection wall on north shore of Lake St. Francis. .... Left service.	1884-86. 1884-85. 1st Jan., 1886.
Douglas, R. C. ....	Engineering Staff, Ottawa—canals, &c. ....	July, 1872-89.
Drummond, —, R.E. ....	Superintending Engineer, first Suspension bridge, Ottawa.	1826.
Duberger, C. C. ....	Assistant Engineer, Public Works, harbour surveys, north shore River St. Lawrence, below Quebec. ....	1881.
Duchesneau, A. ....	Engineering Staff, Lachine Canal enlargement, &c., Mont-real Division. .... Superintending Engineer's office, Montreal. ....	July, 1872-81. Nov., 1881-89.
Dumais, Horace .....	Harbour surveys, Lake St. John. ....	1889.
Duvernety, Lieut.-Col. Henry .....	Royal Staff Corps, Imperial Government. Superintending Engineer, construction of Grenville Canal, &c., under Imperial Government. .... Report on Grenville Canal. .... Report on Chute à Blondeau and Carillon Canals. .... Grenville Canal. .... The Grenville, Chute à Blondeau and Carillon Canals, on the north side of the River Ottawa, were designed and constructed by the Royal Staff Corps of Engineers for the Imperial Government. The records respecting these canals were kept in the Ordnance Office at Montreal, and were destroyed by fire in 1852. It appears, however, that the "Grenville Canal" was completed in 1829, the "Chute à Blondeau" in 1832, and the "Carillon", in 1833, and that on the 24th of April, 1834, they were opened, and the steamer "St. Andrew" made the first passage through them. These old canals were 8 miles in length, with 11 locks of 107 to 130½ feet, by 32 to 33 feet and 6 feet depth of water on sills of locks. Cost not ascertained. They were placed under control of Department of Public Works, Canada, 3rd March, 1857. They have since been enlarged, and are now 6½ miles in length, with 7 locks of 200 by 45 feet and 9 feet depth of water on lock sills. The enlargement was commenced in 1871 and completed 27th May, 1882.	1819-24. 20th Nov., 1820. 26th Dec., 1827. 1827-33.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Duverniet, Lieut.-Col. H.	Cost of enlargement, up to 30th June, 1882, \$975,142.54. Report and estimates, proposed canal and lock at Ste. Anne, north side of River Ottawa, instead of old wooden lock between Ile Perrot and Vaudreuil, built in 1816 by the St. Andrew's Steam Forwarding Company. for steamers of 20 horse power.	13th Dec., 1831.
Eads, Jas. B., U.S.	Report on Toronto Harbour proposed improvements . . . . Died, 8th March, 1887.	14th March, 1882.
Fafard, Eugène.	Engineering Staff, Public Works, harbour surveys, P.Q.	1888.
Fafard, F. X.	do do do	1881.
Faga, J. M.	do do do Ontario	Sept., 1874-80.
Fairbanks, Charles.	Survey and report, &c., projected St. Peter's Canal, Cape Breton, N.S.	1850.
Fanshaw, Col., R.E.	Commissioner Rideau Canal.	1828.
Farijana, F. C.	Proposed Cedars Canal survey on north shore of River St. Lawrence. House Harbour, Magdalen Islands, Gulf of St. Lawrence. Harbours, Ontario, &c. Died, May, 1882.	1872-73. 1874-75. 1875-81.
Fellowes, Charles L.	Served on examination of part of Dawson Route. Engineering Staff, surveys, &c., Welland Canal, 2nd enlargement. Assistant Engineer, north division, Welland Canal, 2nd enlargement.	1869. 1870-76. 1st July, 1876, to 30th May, 1882.
Finlay, John.	Deputy Assistant Commissary General. Superintendent in charge of construction, Lachine Canal. Gives length and number of locks, &c., of the Cascades, Split Rock and Côteau du Lac Canals in a letter dated. See Canadian Archives, under D. Brymner's custody, at Ottawa, page 121, vol. 47.	1823 to 1829. 7th June, 1828.
Fleming, Peter.	Recommends dredging River Richelieu so as to avoid building lock and dam at St. Ours. Dredging of River Richelieu commenced. Consulting Engineer, Williamsburgh and Cornwall Canals. Engineer employed by Commissioners of Chambly Canal. These Commissioners were appointed by Act, 3rd Geo. IV, Cap. 41:—Samuel Hatt, W. Macrae, Gabriel Marchand, R. Boileau, Timothée Franceur, 1829. Survey, plans and estimates submitted to Commissioners. Probable cost estimated at £54,167 6 0. This estimate submitted to an officer of the Royal Engineers, who reported thereon at the instance of Sir James Kemp, and estimated the probable cost at £96,745. This last estimate was submitted to Messrs. Hanlon and Hopkins, Civil Engineers, who estimated the probable cost at £60,300. Canal commenced. Canal opened throughout, in the spring of. Length, 12 miles; 9 locks, 118 to 125 by 23½ to 23½ feet, with 7 feet depth of water on sills; breadth of canal, at bottom, 36 feet, at top, 60. In 1840, the total cost was estimated at \$404,000. The total cost of the works, from their commencement to the 30th June, 1867, including improvements, was \$634,711.76.	1829. 1830-31. 1834. 1830. Oct., 1831. 1843.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Fleming, Peter.....	The original estimate was based on locks 100 by 20 feet, with 5 feet of water on sills of locks.	
Folsom, C. W.....	Engineer in charge of construction, St. Peter's Canal, Cape Breton, N.S.....	1854.
Forbes, W. B.....	Deputy Commissary General. Superintendent St. Lawrence Canals .....	1830.
Ford, Lieut.-Col.....	Royal Engineer. Succeeded Col. Thompson, R.E., as Superintendent Engineer of the Rideau Canal, under Imperial Government.	
Forsyth, Robert .....	Superintending Engineer, Montreal Harbour and Ship Channel Improvement, River St. Lawrence, Montreal to Quebec .....	1855 to 1864.
Foulis, Robert.....	Report on River St. John, from Fredericton to Grand Falls, New Brunswick.....	21st Aug., 1826.
French, J. Barnard.....	Welland Canal Staff, north division, 2nd enlargement.....	1876.
Frome, Lt. E. G., R.E..	Description of Rideau Canal and Chaudière bridge.....	28th Feb., 1837.
Gallwey, W. B.....	Preliminary surveys, maps, profiles of projected Chats Canal, between Lake Chaudière and Lake des Chats, River Ottawa, 33 miles above the City of Ottawa..... See Report of John Page, Chief Engineer of Public Works, dated Quebec, 30th March, 1854. Work commenced by A. P. McDonald and F. Schram, contractors .....	1852 to 1854. Aug., 1854.
	Unfinished since work was suspended .....	15th Nov., 1856.
	Canal 2·83 miles long, designed with 6 locks, of 190 by 45 feet each, with 7 feet of water on the sills and a total lockage of 49·80 feet. Total expenditure, chiefly on rock excavation and preparing stone for locks, \$482,950.81, up to... See page 841, App. 30, by G. F. B., Public Works Report, 1867-82.	1st July, 1867.
Gamble, F. C.....	Assistant Engineer, Public Works, British Columbia..... do in charge of Public Works, British Columbia .....	1st May, 1881-86. 1st Jan., 1886-88.
	Member Canadian Society of Civil Engineers .....	20th Jan., 1887.
	Resident Engineer and Agent, Public Works Department, British Columbia .....	1st Jan., 1888-89.
Gamble, S.....	Report on projected Caughnawaga Canal, between River St. Lawrence and Lake Champlain.....	1855-56.
Garon, L.....	Assistant Engineer, Public Works, harbour surveys, Ontario	1880-81.
Gaudet, J. F.....	Engineering Staff on survey, Dawson Route, from Thunder Bay, Lake Superior, to Fort Garry, Manitoba, 451 miles	1857-59.
Gauvreau, Pierre.....	Engineering and Architect Staff, Province of Quebec, Public Works Department .....	1850-67.
	Subsequently employed by Provincial Government of Quebec until his decease, on the 16th May, 1884, at the age of 71.	
Geddes, —.....	Consulting Engineer with Capt. Cole, R.E., and Fleming, Williamsburgh and Cornwall Canals.....	1834.
Gisborne, F. N.....	Mechanical Engineer and Electrician, &c. Fellow Royal Society, Canada.....	1882.



## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Gisborne, F. N. ....	Superintendent Government Telegraphs, Nova Scotia..... Laid Prince Edward Island Cable ..... Superintendent Government Telegraph and Signal Service, Canada ..... Laid Gulf of St. Lawrence and Bay of Fundy Cables..... Laid British Columbia Cables ..... Member of Council Canadian Society of Civil Engineers...	1848-51. 1852. 1st May, 1879-90. 1880. 1881-84. 1888-89.
Gisborne, Hartley .....	Government Telegraph Constructing Engineer, British Columbia, &c..... District Superintendent Government Telegraphs, North-West Territories..... Associate member Canadian Society of Civil Engineers.... Located at Fort Qu'Appelle Telegraph Station.....	1880-82. 1st Oct., 1882-89. 9th June, 1887. 1889.
Gouin, W. F. ....	Engineering Staff, Public Works, Ontario, Manitoba and North-West Territories.....	1884-89.
Gourlay, Robert.....	His views respecting Cornwall and Welland proposed canals, and improvement of the River St. Lawrence... "Statistical Account of Canada," with map, published in London, England.....	1819. 1822.
Gray, Henry A. ....	Assistant Engineer, Intercolonial Railway..... do Public Works Department..... Examination and report, Neebish Rapids channel, Lake Huron..... Engineer in charge of harbours, Western Ontario..... Examination and report, Rideau River flood and proposed outlet by canal..... Member Canadian Society of Civil Engineers..... Assistant Chief Engineer, Public Works, at Ottawa..... Examination and report on saw-dust obstructions, River Ottawa..... Resident Superintending Engineer, Public Works, Maritime Provinces..... Engineer in charge of harbours, Western Ontario.....	1867-74, 1878-80. 1880. 1881 to 1886. 1886. 20th Jan., 1887. 1886 to 1888. 11th May, 1888. Aug., 1888-89. 1st July, 1889.
Greene, D.M.—U.S. ....	Report on saw-dust in navigable streams.....	10th March, 1871.
Greenwood, H. ....	Engineering Staff, New Canal Works, River Trent.....	1883 to 1887.
Grondin, A. L. ....	Engineering Staff, Public Works, harbour surveys, north shore of River St. Lawrence.....	1883.
Guay, J. F. ....	Mechanical Engineer, Altoona Shops, Pennsylvania Railway, U.S..... Assistant Engineer, North Shore Railway, Quebec to Montreal..... Engineer in charge of location and construction of Quebec and Lake St. John Railway..... Survey of projected railway from St. Alphonse, Baie des Ha! Ha!, River Saguenay, to Lake St. John..... Survey and plans for water works at Fraserville, R. du Loup..... Survey and plans for water works at Chicoutimi, River Saguenay..... Associate Member Canadian Society of Civil Engineers.... Engineer in charge of construction, Montmorency and Charlevoix Railway, Quebec to Ste. Anne de Beaupré..... Engineer in charge of surveys for projected works, Lake St. John, &c.....	1873 to 1878. 1878-79. 1880-87. 1882. 1885. 1887. 25th June, 1887. 1887 to July, 1889. 1889.
Guerin, Thomas.....	Engineering Staff, Head-quarters, Public Works..... Previously Professor Civil Engineering at McGill University, Montreal. Assistant Engineer of G. F. Baillairgé on Baie Verte Canal survey.....	1st Sept., 1864-69. 1870 to 1873.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Guerin, Thomas.....	Hydraulic surveys, Montreal, Ottawa, Chaudière Falls and Manitoba, &c..... Member Canadian Society of Civil Engineers..... Died suddenly in his office at Ottawa, 7th May, 1887.	1873-87. 20th Jan., 1887.
Gzowski, Col. C. S.....	Graduate of Engineering Military School of Kozemiensk, Russia. Engineer on the Pennsylvanian Canals, Lake Erie division, and on the construction of a portion of the New York and Erie Railway, terminating at Dunkirk, Lake Erie, U.S..... Superintending Engineer, roads, harbours, &c., Western Ontario..... Chief Engineer, St. Lawrence and Atlantic Railway..... Consulting Engineer do do do do do harbour and works, at Montreal..... do do ship channel improvement between Montreal and Quebec..... Canal Commission, projected enlargement, &c..... International Bridge across the Niagara..... Report on proposed enlargement Welland Canal..... do do scheme Baie Verte Canal..... Third President Canadian Society of Civil Engineers.....	1837 to 1841. 1841 to 1847. 1848 to 1852. do do do 1850 to 1853. 1850 to 1853. 16th Nov., 70 to 71 1871 to 1872. 14th Feb., 1873. 18th do 1873. 1889.
Hale, W. D.....	Specification for extension of piers at Port Stanley, Lake Erie.....	2nd Nov., 1849.
Hall, Francis Benj.....	Welland Canal route, with Messrs. Clowes and Roberts... Shubenacadie Canal, commenced 1827. Completed 1862... See App. 30, p. 902, by G. F. B., Public Works Report, 1867-82. Superintendent construction, Burlington Bay Canal..... Report on Baie Verte Canal project..... Report on proposed St. Peter's Canal, Cape Breton, N.S... Roads, Ontario..... Welland Canal commenced 30th November, 1824. Opened 30th November, 1829, for vessels drawing 7½ feet of water, and of 21½ feet beam. Wooden locks, 110 by 22.	1824. 1825. 1825 to 1832. 1825. 1826. July, 1845.
Hamel, Amédée.....	Engineering Staff, Culbute Canal..... Assistant Engineer, Canadian Pacific Railway survey..... do do River St. Louis improvement..... Head-quarters, Railways and Canals..	1874. 1879. 1880. 1880-90.
Hamel, Félix M.....	Engineering Staff, Public Works, harbours, &c..... do do Intercolonial Railway, until..... do do Public Works, at Head-quarters, until.. do do Canadian Pacific Railway do .. do do Culbute Canal, River Ottawa do .. Eng. in charge. Lock, &c., R. aux Lièvres and Iron Bridge Chaudière Falls..... Member Canadian Society of Civil Engineers.....	1st March, 1867, to 1st Sept., 1868. 1st Sept., 1870. 10th June, 1871. January, 1874. August, 1874. 1887-90. 20th Jan., 1887.
Hanlon, —.....	This Engineer and W. R. Hopkins, "Persons possessing much professional talent," were consulted by Chamblly Canal Commissioners respecting the estimate of Peter Fleming, £54,167 6s., which they increased to £60,300, for the construction of this canal, with locks of 100 by 20 feet, with 5 feet water on sills..... Canal commenced..... Canal opened to navigation with locks 118 to 125 x 23½ feet with 7 feet water on the sills.....	1830-31. Oct., 1831. 17th Nov., 1843.
Jarrington, Thos. W....	Engineering Staff, St. Lawrence and Ottawa Canals..... Assistant Engineer, Lachine, Chamblly, Culbute Canals...	19th July, 1870. 1st October, 1870.

ENGINEERS employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Harrington, Thos. W...	Assistant Superintending Engineer, Canals, Province of Quebec. Member Canadian Society of Civil Engineers. Died 26th October, 1887.	1st May, 1875-87. 20th Jan., 1887.
Harris, Major —, R.E...	Rideau Canal, Report and Estimate jointly made with Col. J. C. Smith and Sir George Hoste. Locks to be 108 × 20 × 5 feet water on sills. (Afterwards built 133 × 33 × 5 on sills.) Work commenced in 1826, and completed 29th May, 1832, under Lieut. Col. By, R.E.	1825.
Harvey, —, R. E.....	The last of the Superintending Engineers of the Rideau Canal, under the Imperial Government, until the canal was transferred to the Department of Public Works of Canada by Order in Council. See "Lieut.-Col. By" for his predecessors.	3rd March, 1857.
Hawkins, William.....	Survey with David Taylor and David Thompson, of canal route Lake Huron to Ottawa River. See Baddeley, Cartwright, Clarke, Walter Shanly, James Stewart, David Taylor, David Thompson, and App. 30, p. 837 to 847, by G. F. B., in General Report Public Works, 1867-82.	1837.
Haycock, Sam. H.....	Engineering Staff, Galops Canal enlargement.	August, 1879.
Hayne, Capt. R.....	Royal Staff Corps. Superintendent, construction of Ottawa Canals.	1833-34.
Hazlewood, Samuel.....	District Engineer on Canadian Pacific Railway. In charge of Fort Frances Canal works, at foot of Rainy Lake. See Baillairgé, Mortimer, Sutherland, H. Thompson.	1875.
Heckman, J. W.....	Engineering Staff, Public Works, river improvements. Member Canadian Society of Civil Engineers.	1886. 24th Feb., 1887.
Hegan, J. B.....	Assistant Engineer, Intercolonial Railway. Assistant Engineer, Public Works, Maritime Provinces. Acting Engineer in charge of Public Works do Member Canadian Society of Civil Engineers. Resident Engineer at St. John, Public Works, N.B.	1869 to 1873. 1873 to 1880. 1882 to Sept. 1883. Sept., '83 to July, '88. 17th May, 1888. July, 1889.
Henry, George W.....	Lachine Canal enlargement, Lachine Division. Left service July, 1885, for C.P.R.	July, 1880-85.
Henshaw, George H....	Resident Engineer, new lock and channel Ste. Anne de Bellevue, River Ottawa, north side. Paper on floods of River St. Lawrence. Paper on frazil ice, its nature and prevention, to the Canadian Society of Civil Engineers. Member Canadian Society of Civil Engineers.	October, 1873-83. 1884. 1887. 22nd March, 1888.
Heyland, A. R.....	Engineering Staff, Public Works, British Columbia.	1st October, 1885, to 19th Nov., 1888.
Hill, A. E. B.....	Engineering Staff, Public Works, British Columbia. Bachelor of Applied Sciences, member Canadian Society of Civil Engineers.	1st Oct., 1887-89. 25th June, 1887.
Hopkins, W. R.....	Resident Engineer, Chambly Canal. Chambly Canal commenced. Locks 118 to 125 × 23½, with 7 feet of water on sills. Chamby Canal opened to navigation. St. Ours Lock and Dam proposed.	1831-34. Oct., 1831. 17th Nov., 1843. 1835.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Hoste, Lieut.-Col. Sir Geo., R.E. ....	Rideau Canal, report and estimates. Locks to be 108 x 20 and 5 feet depth on sills. (Altered to 133 x 33 x 5)... Work commenced 1826, and completed 29th May, 1832, under Lieut. Col. By, R.E.	1825.
Hounslow, T.; F. W., R.E.D. ....	Description of method of raising buildings by screws in Canada and the United States .....	18th Sept., 1841.
Irving, J. L. ....	Assistant Engineer to H. A. Gray, Western Ontario .....	26th May, 1884-88.
James, C. ....	On southern division, Welland Canal, 2nd enlargement ....	1875.
Jervis, J. B. ....	Report on projected Caughnawaga Canal from River St. Lawrence to Lake Champlain, or from Caughnawaga to St. John, recommending its construction, as proposed by J. B. Mills, 19th February 1848. ....	13th Feb., 1855.
Jebb, Capt., R.E. ....	Routes for Rideau Canal proposed betw'n Ottawa & Kingston	1815 to 1817.
Joslin, H. K. ....	Lachine Canal, 2nd enlargement, Res. Eng., Montreal Div. Left service 1st May, 1882. Died in Nov., 1887.	July, 1872-82.
Keating, W. A. ....	City Engineer, Halifax, N.S. Superintending Engineer, Halifax Graving Dock. .... Constructed by Halifax Dry Dock Company, incorporated in England. Agreement with Public Works Depart., Canada, signed... Length, 585 feet; width, at coping level, 102 feet; width on bottom, 72 feet; width of entrance, 95 feet; depth on sill, ordinary spring tides, 30 feet—(spring tides rise 6 feet; neap tides, 3 feet). Work commenced after signing agreement .....	1886-89. 13th Feb., 1886. 13th Feb., 1886. 20th Feb., 1889.
	Opened for use, H.M.S. "Canada" docked. .... Subsidy by Dominion Government \$10,000 per annum for 20 years. Subsidy by Imperial Government and City of Halifax \$20,000 per annum. Contractor, Samuel Brookfield. Cost, about \$1,000,000. Approved by H. F. Perley, Chief Engineer, Public Works Departments .....	21st Sept., 1889.
Keefer, George. ....	Res. Eng. first construction of lower div. of Cornwall Canal Resident Engineer in charge of Chambly Canal, completion and improvements .....	1834-43. 1844-47.
	Member of Council, Canadian Society of Civil Engineers ..	1889.
Keefer, Samuel H. ....	Secretary and Asst. Engineer, Public Works, Upper Canada Chief Engineer, Public Works, Ontario and Quebec. .... Survey Saut-Ste. Marie projected canal, Canada. .... Chief Superintending Engineer, Grand Trunk Railway .....	1833-41. 17th Aug., 1841-52. 1852. 1853 to 1859.
	Inspector of railways .....	1857-64.
	Assistant Commissioner of Public Works .....	6th May, 1859-64.
	Canal Commission .....	16th Nov., 1870-71.
	Report on proposed Welland Canal enlargement .....	14th Feb., 1873.
	do do Baie Verte Canal route, &c. ....	18th Feb., 1873.
	Second Past-President Canadian Society of Civil Engineers Born at Thorold, 22nd Jan., 1811. Died at Brockville, 7th Jan., 1890.	1888.
Keefer, Thos. C. ....	Assistant Engineer, Welland Canal .....	1842-45.
	River Ottawa slides and booms .....	1846 to 1849.
	River St. Lawrence improvements .....	1849 to 1851.
	Survey and design for Victoria Bridge .....	1851-52.
	Consulting Engineer, Ship Channel and Montreal Harbour	1853 to 1856.
	Hamilton Water Works. ....	1857-59.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Keefer, Thos. C. ....	Georgian Bay Canal project, report ..... Chief Executive Committee of Canada at Paris Exhibition. .... Montreal Water Works, &c. .... First Past-President Canadian Society of Civil Engineers. .... President American Society of Civil Engineers. .... Montreal Flood Commission. ....	1863. 1878. 1878 to 1887. 24th June, 1887. 1888. 1886-88.
Keeley, D. H. ....	Assistant Superintendent Government Telegraph Lines of Canada. .... Associate Member of Canadian Society of Civil Engineers. ....	1st March, 1882-90. 25th June, 1887.
Keller, Capt. L. ....	Engineering Staff, Public Works, hydrographic survey, Pte aux Trembles to Cap Charles, River St. Lawrence, &c. ....	1882-84.
Kelly, Athol D. ....	Engineering Staff, Welland Canal enlargement, North Division. ....	1875.
Kennedy, John ....	Chief Engineer, harbour improvements, Montreal, and dredging of River St. Lawrence, Montreal to Quebec. .... Vice-President Canadian Society of Civil Engineers. .... Montreal Flood Commission. .... Member of Council Canadian Society of Civil Engineers. ....	20th April, 1875-89. 24th June, 1887. 1886-88. 1888-89.
Kierkowski. ....	Engineering Staff, Beauharnois Canal. .... Died towards 1871.	1842 to 1845.
Killaly, John S. ....	Educated in Europe for the civil and mining branches of the profession; chose the North American States as a field of operation. He was subsequently engaged in Canada, upon the construction of the Cornwall Canal, which was commenced in 1834 and completed in 1843. Enlargement with locks, 270 × 45 × 14 feet water on lock sills; commenced 1876, unfinished 1889. Superintending Engineer of the Rideau Canal. .... He was the first Superintending Engineer appointed on this work by the Government of Canada; all previous engineers thereon having been appointed by the Imperial Government. ( <i>See</i> Lieut.-Col. By, R.E.) .... Returned to the United States where he has been engaged on various works, chiefly, of late years, upon the canals of the State of New York. .... Resides at Booneville, Oneida County, N.Y. .... Brother of Hon. H. H. Killaly, chairman of the Board of Works, Canada, 29th Dec., 1841 8th June, 1846.	Jan., 57 to April, 58 1832 to 1857. 1858-89. Dec., 1889.
Killaly, Hon. H. H. ....	Entered Trinity College, Dublin, ; graduated there in 1819, when he commenced the practice of civil engineering, superintending the construction of the Custom House at that city. Was afterwards associated with his father until the death of the latter in 1832, and was engaged in the construction of roads, bridges, canals, and the improvement of the River Shannon, &c., most of which works being situated in the western part of Ireland. His father was for many years Government Engineer for the Board of Work of Ireland, under Gen. Sir Geo. Burgoyne, R.E. Resigned his position in Ireland and came to Canada where he settled near New London, Ont. .... Survey with N. H. Baird for 1st enlargement of Welland Canal. .... Chairman Board of Works, Ontario and Quebec. .... Specification of works at Winds Harbour, Lake Ontario. .... Assistant Commissioner of Public Works. ....	1834. 1837. 29th Dec., 1841 8th June, 1846 1st May, 1843. 15th Feb., 1861

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Killaly, Hon. H. H. ....	Special reports on Saut-Ste-Marie, Goderich Harbour, piers below Quebec, Lake St. Peter, Pointe Pelée lighthouse, &c. .... Died 28th March, 1874, aged 72.	1846 to 1862.
Killaly, H. H. jun. ....	Resident Engineer, upper division of Lachine Canal, 2nd enlargement. .... Cornwall Canal enlargement, upper half. .... Rapide Plat Canal, &c., enlargement, &c. .... Member Canadian Society of Civil Engineers. ....	Feb., 1876-85. 1st July, 1885-88. Dec., 1884-88. 20th Jan., 1887.
King, Chetwood Henry Waters. ....	Engineering Staff, southern division, Welland Canal enlargement. ....	Feb., '83 to Nov., '88.
King, William. ....	Assistant Mechanical Engineer, Ottawa, &c. .... Public buildings and dredges.	26th Dec., 1878-89.
King, Capt. William. ....	Royal Staff Corps. Grenville Canal. .... Superintending Engineer, Cascades, Split Rock, Côteau du Lac—Ordnance Canals. .... See By, Mann, &c.	1825. 1826.
Kingsford, William. ....	Engineering Staff, Lachine Canal Survey. .... On particular service until. .... Engineer in charge of harbour works, Ontario. .... Transferred to Department of Railways and Canals. .... Member Canadian Society of Civil Engineers. ....	1847. June, 1873. June, 1873 to 1890. 1890. 20th Jan., 1887.
Kinipple & Morris. ....	Engineers, Mechanics Institute of Civil Engineers, England Engineers—Docks at entrance of River St. Charles, Quebec. Works authorized by Act 36 Vic., chap. 32, sec. 17. Princess Louise embankment and quay wall on north side of 1st projected series of docks, 3,960 feet long and 330 wide. Outer or tidal basin, 20 acres in area, and 25 feet deep at low water of ordinary spring tides, for a length of 1,250 feet. Inner basin, 36 acres in area, and 25 feet deep at highwater lowest neap tides, for a length of 2,160 feet—Dredging, &c., unfinished. .... Spring tides rise 18 and neaps 13 feet. Work commenced under Harbour Commissioners, Quebec. .... Quay wall and outer basin, nearly completed. .... Cross-wall between inner and outer basins, commenced in 1883, under H. F. Perley, Chief Engineer, Public Works, and completed excepting caisson. .... Contractors—Dredging, walls, &c., Simon Peters, Augustus B. Wright, Edward Moore. .... Contractors—Dredging, cross-wall, &c., Larkin, Connolly & Co. .... Contractor—Valves of sluices, &c., F. X. Drolet. .... Expenditure on construction, \$3,821,900. ....	1875-82. 1873. 1889. 28th May, 1877. Dec., 1882. 1889. 2nd May, 1877 to '81. Sept. 1883-89. .... 1887. 10th Dec., 1889.
	Engineers—Lévis Graving Dock, opposite Quebec. .... Length, 495 feet, with a circular head of 31 feet radius, and a square offset of 19 feet on each side. Width at coping level 100, and at bottom 73 feet. Entrance width, 62 feet. Depth of water on sill at high water of ordinary spring tides, 25½ feet. Depth of water on sill at high water of ordinary neap tides, 20½ feet. Work authorized by Act 38 Vic., chap. 56. ....	1875-82. 1875.

ENGINEERS Employed on Public Works, Canada.—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Kinipple & Morris .....	<p>Site chosen by an Order in Council. .... May, 1877.</p> <p>Work commenced under Harbour Commissioners, Quebec. .... 1878.</p> <p>Work continued and completed, under H. F. Perley, Chief Engineer, Public Works .... Sept., 1883-89.</p> <p>Contractors—Masonry, &amp;c., Larkin, Connolly &amp; Co. .... 17th Aug., 1878-83.</p> <p>do do do do Sept. 1883-89.</p> <p>do Boilers and pumping machinery, Carrier, Laine &amp; Co. .... 30th March, 1880.</p> <p>do Caisson, &amp;c., Wigham, Richardson &amp; Co. .... 10th Dec., 1889.</p> <p>Expenditure on construction, \$910,000 up to .....</p> <p>Engineers—Esquimalt Graving Dock, about 3 miles below Victoria, Vancouver Island, B. C. Plans and specifications prepared and on exhibition at Victoria, &amp;c., by Provincial Government of British Columbia. .... 18th Nov., 1879.</p> <p>Plans of the caisson furnished by them. .... 1st Dec., 1882.</p> <p>Act of Provincial Government, B.C., authorizing construction of graving dock, 43 Vic., chap. 8. .... 1880.</p> <p>Agreement between Dominion Government and Government of British Columbia, under sanction of Imperial Government, respecting construction of graving dock, signed subsequently to Contract awarded to McNamee &amp; Nish by Government of British Columbia. .... 12th July, 1880.</p> <p>This contract was cancelled by Government of British Columbia. .... 1880.</p> <p>Work continued by day's labour. .... 1882.</p> <p>Hon. J. W. Trutch appointed Engineer in charge and W. Bennett, as Resident Engineer. .... 1882-83.</p> <p>Work under Dominion Government authorized by Act 47 Vic., chap. 6. .... 24th Nov., 1883.</p> <p>The graving dock and its grounds to be transferred to Dominion Government in virtue of this Act. .... 1884.</p> <p>Work continued and completed under H. F. Perley, Chief Engineer, Public Works. .... 1884-87.</p> <p>Contract for completion of graving dock signed by Larkin, Murphy &amp; Connolly, \$581,841.43. .... 8th Nov., 1884.</p> <p>Contract for caisson, "Dominion Bridge Co.," Montreal, \$53,729.54, to .....</p> <p>Dock completed and opened by entrance of H.M.S. "Cormorant" .....</p> <p>Expenditure—Provincial Government, British Columbia. .... \$384,512.66</p> <p>do Imperial Government 243,333.33</p> <p>do Dominion do 529,214.42</p> <p>Total .....</p> <p>Dimensions of graving dock as completed up to ... 17th Dec., 1889.</p> <p>Length at centre. .... 430 feet</p> <p>Width at bottom. .... 41 "</p> <p>do coping level. .... 90 "</p> <p>do entrance. .... 65 "</p> <p>Depth of water on sill, 26½ feet at high water springs.</p> <p>Springs rise 7 to 10 feet, per Capt. Richards.</p> <p>Neaps rise 5 to 8 "</p> <p>N.B.—The last expenditure on this dock was for 75 steel keel blocks, \$7,150, as per agreement with Wilson Bros., Victoria, B.C. .... 19th Aug., 1889.</p> <p>The latter sum is comprised in the total amount expended as above.</p>	
Lafleur, Eugène D ....	<p>Engineering Staff, Public Works at Ottawa. .... 27th Sept., 1881.</p> <p>Assistant Engineer, hydrographic survey, River St. Lawrence. .... July, 1883-84.</p> <p>Harbour works, Ontario, Quebec and New Brunswick. .... 1884-89.</p> <p>Member Canadian Society of Civil Engineers. .... 20th Jan., 1887.</p>	

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Langevin, H. Laforce...	Princess Louise Basins, Quebec, and Pointe Lévis Graving Dock..... Assistant Engineer, harbour works, Quebec..... Associate member Canadian Society of Civil Engineers....	1884-88. 1889. 27th June, 1888.
Languedoc, G. de G.....	Grenville Canal enlargement..... Associate member Canadian Society of Civil Engineers....	May, 1879 to 1887. 24th Feb., 1887.
Lantier, E.....	Engineering Staff, survey proposed Cedars Canal.....	1872-73.
Larue, Adolphe.....	Survey of Lake St. Louis.....	1836.
Laurie, James.....	Report and estimates, St. Peter's Canal, Cape Breton, N.S.....	July, 1853.
Lefebvre, Jean.....	Engineering Staff, Metapédic Road, S. Division, assistant of G. F. Baillairgé.....	1857 to 1867.
Legge, Charles.....	Engineering Staff at Head-quarters, Montreal, and on weirs, &c., of canals below Prescott..... Afterwards on railway service, &c. Died —	1846 to 1854.
Lepage, J. B.....	Engineering Staff, Public Works, harbour surveys and river improvements..... Previously in charge of Colonization roads since 1857.	1880-88.
Lepage, Samuel.....	Engineering Staff, Public Works, harbour surveys below Quebec.....	1883.
Leprohon, C. de B.....	Engineering Staff, Lachine Canal enlargement, Lachine Division..... Left service July, 1885, for Corporation, Montreal.	Oct., 1875-85.
Leslie, William Lewis...	Engineering Staff, S. Division, Welland Canal enlargement Transferred to Head-quarters, Ottawa.....	Oct., 1872. Feb., 1889.
Lewis, Col., R.E.....	Commissioner, Rideau Canal.....	Spring, 1828.
Light, Alex. L.....	Assistant Engineer on western roads, Ontario, under Col. C. S. Gzowski.....	1842 to 1848.
Lightfoot, F. C.....	Engineering Staff, surveys of harbours and rivers..... Employed in Chief Engineer's Office.....	July, 1874-77. 1877-90.
Lindsay, John.....	Engineer.—Survey head-waters, River Ottawa..... Died 28th Sept., 1880, at Mattawa.	15th June, 1880.
Long, Major Andrews...	Royal Staff Corps of Engineers, Imperial Government. Construction and repairs, Cascades, Split Rock and Côteau du Lac—military canals..... <i>See By, Mann, &amp;c.</i>	1817.
Lyons, James.....	Superintending Engineer, River Trent Works—improvements; light-houses, River St. Lawrence, &c.....	1843-55.
Macdonald, J. Frobisher	Cornwall Canal, &c..... Superintending Engineers, canals, Lachine, Chambly, St. Ours, &c..... Piers below Quebec..... River St. Maurice, slides and booms..... Temiscouata Road, commenced 1856, opened 1861, completed 1866..... Died at Toronto in the autumn of 1857.	1842-43. 1848-52. 1849-50. 1851-52. 1853.
Macdonnell, Alan.....	Engineering Staff, Public Works, harbours, &c., Ontario.. Member Canadian Society of Civil Engineers.....	Sept., 1873. 20th Jan., 1887.



## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Maillefert .....	Submarine Engineer, examined River St. Lawrence Rapids from Lake Ontario to foot of Lake St. Louis at Lachine	1854.
Maine, Charles .....	Engineering Staff, harbour of Three Rivers, River St. Maurice slides, dams and booms, River Yamaska, Nicolet, &c. Previously on Public Works in France, &c.	1886-89.
Mann, Col. Cother .....	Royal Engineer Corps, Imperial Government. Letter to Messrs. Forsyth, Richardson & Co., opponents to McTavish, Frobisher & Co., respecting Saut Ste. Marie Canal, prior to ... Saut-Ste-Marie Canal, on Canadian territory, 3,000 feet long, with a lock, raising the water 9 feet, between Lakes Huron and Superior; survey made by order of the firm of Messrs. McTavish, Frobisher & Co., on behalf of the North-West Company ... Canal constructed by them, prior to ... See Capt. Bruyères, Royal Engineer. Report on the state of the first canals built between 1779 and 1783, at the Cascades and Mill Rapid, Split Rock, "Trou du Moulin" at Longueuil's Mill and at Côteau du Lac, recommending their enlargement ... He recommended to enlarge the original locks, which were 7 feet wide at Côteau du Lac, and 6 feet at Split Rock, to 9½ feet, between the gates, to increase the depth of water 1½ feet in the canals and on the lock sills, then about 2 feet, to 3½ feet, to widen the lock chambers 4 feet and the canals 2 feet. At Mill Rapid and Cascades, at Cascades Point, herecommended the construction of one instead of two canals, and to sink the bottom at each entrance thereof to a depth of 3 feet below the lowest water for the passage of the largest boats. Canal to be 10 feet wide, with 3 locks 20 feet wide in the chamber and 120 feet long, so as to allow the passage of 6 boats at a time. Frederick Haldimand, Lieut. Governor of Canada, 1778-1785, wrote to Lord Geo. Germain that a very complete canal was completed and in operation at Côteau du Lac. See letter in Canadian Archives, at Ottawa, D. Brymner, Archivist, dated ... The locks at "Split Rock" and "Côteau du Lac" were partly rebuilt, and a new canal, about half a mile in length, with 3 locks and a total rise of 13½ feet was built at the Cascades ... All the locks were probably then enlarged to 9½ feet between the gates, as suggested by him. The locks of the Cascades, Split Rock and Côteau du Lac canals were enlarged by the Royal Staff Corps, to 12 feet between the gates, and the depth of water on the lock sills was increased to 3½ feet, for the passage of Durham boats with from 80 to 100 barrels of flour, instead of the former boats with 30 to 40 barrels ... From 1815 to 1834, both years inclusive, the gross revenue on these canals was £31,580 13 4; the cost of repairs, &c., £10,102 15 2½, and the net revenue £21,470 17 1¼ ... Report on navigation of St. Lawrence at Longueuil Mill, "Trou du Moulin," and between that point and Cedars ... In charge of construction of Grenville Canal commenced in summer of ... G. F. Baillairgé, the present Deputy Minister of Public Works, made surveys and plans of the canals at the Cascades, Split Rock and Côteau	18th April, 1803. 1797. April, 1802. 24th Dec., 1880. 25th Oct., 1780. 1804. 1817 1815 to 1834. 25th Sept., 1818. 1819.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Mann, Col. Cother.....	du Lac, the locks and gates of which were then entire; the width between the gates of the locks was 12 feet, and the depth of water on the sills from 3 to 4 feet. He also measured one of the canals built between 1779 and 1783, on Cascades Point, which had been used as a flume for a mill then in ruins; the width between the lock gates was 6 feet. From 1857 to 1890, the masonry of the locks, &c., at the Cascades and Split Rock, has been partly demolished by persons in want of cut stone for building purposes. At Côteau du Lac, the old canal has been used most of the time up to 1881 as a flume for a mill erected thereon by George Beaudet, the lessee For further details, see General Report of Public Works, 1867; also, Report on Canadian Archives, 1886, by Douglas Brymner, Archivist. These canals were not constructed by the French, as was believed in 1867.	1857. 1st June, 1871, to 1st Feb., 1881.
Mann, Capt. J. W.....	Royal Staff Corps of Engineers. Report on navigation of St. Lawrence Superintending Engineer, construction of Grenville Canal.	25th Sept., 1818. 1819.
Marceau, Ernest.....	Lachine Canal enlargement. Grenville Canal and Ste. Anne Lock enlargement. Assistant Engineer, Ottawa River canals, &c. Member Canadian Society of Civil Engineers.	July, 1876. Aug. 1877-81. Nov. 1881-89. 12th May, 1887.
McAlpine, Hon. W. J., United States.....	Report on saw-dust in Ottawa River, &c. Report on proposed Welland Canal enlargement.	1st March, 1871. 14th Feb., 1873.
McCarthy, Charles.....	Engineering Staff, Public Works, at Head-quarters, &c. Superannuated 1st July, 1884.	1857-84.
McCarthy, C. J.....	Engineering Staff, Public Works, roads, canals, &c.	Sept., 1872.
McCarthy, James M.....	Engineering Staff, Public Works, under Thos. Guerin. Bachelor of Applied Sciences. Student Canadian Society of Civil Engineer.	1883-84. 20th Jan., 1887.
McCarthy, William.....	Engineering Staff, Public Works, river works, &c. Previously employed on railways. Member Canadian Society of Civil Engineers.	1884-86. 22nd March, 1888.
McCordock, W. J.....	Engineering Staff, Superintendent of dredging, Maritime Provinces.	1870-89.
McGreevy, Charles.....	Engineering Staff, Public Works, harbour surveys. Assistant Engineer, Quebec Harbour works. Associate member Canadian Society of Civil Engineers.	1881-83. 1883-89. 9th Feb., 1888.
McGreevy, Robert.....	Engineering Staff, Public Works, harbour surveys.	1881-86.
McKay, E. B.....	Assistant Engineer on Cowichan River, British Columbia.	1st Sept., 1887, to 2nd Feb., 1888.
McLaughlin, Geo. E.....	Assistant Engineer, Public Works, Maritime Provinces. Engineer in charge Public Works, Maritime Provinces. Died 6th October, 1883.	1872-81. 1881 to 1883.
McNab, Alexander.....	Engineer in charge, construction of St. Peter's Canal for Government of Nova Scotia. Transferred to Department Public Works. Appointed Engineer of Intercolonial Railway, in operation. Canal commenced by Nova Scotia Government, 1854. Canal completed by Dominion Government, 5th August, 1869.	July, 1865-67. July, 1867-72. Nov., 1872.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
McNaughton, Chas. E. . . . .	Engineering Staff, Welland Canal enlargement, Northern Division . . . . . Assistant Engineer to H. A. Gray, Western Ontario . . . . .	1875. 1883.
McTaggart, J.—Eng . . . . .	Examination and report on Rideau Canal . . . . .	1827-28.
Melhuish, Capt., R.E. . . . .	Account of demolition of Glacière Bastion, Quebec . . . . . Consulting Engineer, Chambly Canal . . . . .	1828. 1831.
Merrill, Horace . . . . .	Superintending Engineer, Ottawa River slides and booms . . . . . St. Maurice slides at Shawenegan and Grand Mère, first designed by him and laid out by G. F. Baillargé . . . . . Carillon dam across the River Ottawa . . . . . Died 22nd May, 1883.	20th Jan., 1849, to 22nd July, 1875. 1852. June, 1879, to 1883.
Merritt, Thomas . . . . .	Engineering Staff, Welland Canal enlargement, Northern division . . . . .	1875.
Michaud, C. E. . . . .	Assistant Engineer of G. F. Baillargé on survey of Gaspé and Ste. Anne des Monts road, north shore, Gulf of St. Lawrence . . . . . Engineering Staff, Public Works, harbour works, &c. . . . . On Pacific Railway survey, British Columbia . . . . . Resident Engineer, lock and dam, River Yamaska, Rivers St. Francis and Nicolet, dredging and improvement . . . . . Resident Engineer, harbour works, south shore, River St. Lawrence . . . . .	1861-62. 1st Nov., 1864-70. 1871 to 1873. 1877 to 1888. 1888-89.
Michaud, Cléophas . . . . .	Engineering Staff, Public Works, harbour surveys . . . . . do do do . . . . .	June, 1873. 1884-85, 1887-88.
Millett, Herbert Alfred . . . . .	Engineering Staff, Southern Division, Welland Canal enlargement . . . . .	Aug., 1881.
Millidge, E. G. . . . .	Resident Engineer, St. Peter's Canal, Cape Breton, &c. . . . . Canal commenced by Nova Scotia Government in September, 1854, suspended 1856, resumed in 1866, and completed in 1869. Assistant Engineer, Public Works, Maritime Provinces . . . . . Resident Engineer, Antigonish,--Public Works and surveys, Cape Breton, Guysborough, Antigonish and Pictou Counties, Nova Scotia . . . . . Member Canadian Society of Civil Engineers . . . . .	1875 to 1881. 1872 to 1888. July, 1889-90. 11th Nov., 1887.
Mills, J. B. . . . .	Engineer on the first construction and afterwards on enlargement of the Delaware, Hudson and Erie Canals. Projected Cedars Canal . . . . . Cornwall and Williamsburgh Canals . . . . . Projected Caughnawaga Canals . . . . . Chief Engineer of the Genessee Valley Canal, afterwards on the Kanawha projection in Virginia, U.S., after his departure from Canada. Consulting Engineer and vice-president of the Pottsville and Danville road, in Pennsylvania. Consulting Engineer on the Adirondack Railway, State of New York. Afterwards retired to his home in Peekskill, on the Hudson, N. Y. Born in Chester, 27th March, 1800. Died at Peekskill, N. Y., 29th June, 1871.	1833. 1833-48. 1847-48.
Minnitte, R. C. . . . .	Baie Verte Canal, first survey for a canal of about 4 feet draught, to be fed by fresh water, through valley of Au Lac to the Missiguach Lakes and thence to River Tidnish . . . . .	Oct., 1822.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Monro, Thomas.....	On Grand Trunk Railway, surveys and construction, Montreal to Kingston, and St. Lawrence Bridge survey, Montreal; also, Water Works survey and plan, Montreal.....	1850 to 1857.
	On Toronto and Georgian Bay, proposed canal, in charge of summit level survey.....	1857.
	Assistant Engineer, Hamilton Water Works; Resident Engineer, Hamilton and Port Dover Railway.....	1857 to 1859.
	Public Works, Ontario, &c., Harbours of Refuge; water supply to Public Buildings, Ottawa, &c.....	Feb., 1860-69.
	One of the Government Inspectors of Railways.....	1st May, 1863.
	Engineer of Water Works, Pit Hole City, Pennsylvania.....	1865.
	Assistant Engineer, preliminary location and construction, Intercolonial Railway.....	1868-70.
	Survey, Lake Shehandowan on the Dawson route.....	1869.
	Welland Canal enlargement, survey and location.....	1870-71.
	Engineer in charge of Welland Canal.....	July, 1872, to 31st Jan., 1873.
	Resident Engineer, Northern Division, Welland Canal enlargement.....	1873-88.
	Invited to International Congress of Navigation at Brussels.	30th April, 1885.
	Member of Mechanics Institute of Civil Engineers, England	
	Member Canadian Society of Civil Engineers.....	20th Jan., 1887.
	Aqueducts, Merriton, Simcoe and Niagara Falls.....	1888.
	Examination and report, projected enlargement of Beauharnois Canal, and on projected new canal, north shore, County of Soulanges.....	1889.
Mooney, William.....	Engineering Staff, Lachine Canal enlargement, Montreal Division.....	1873.
	Yamaska lock and m, &c., Assistant Engineer.....	1880-84.
	Died 2nd January, 1885.	
Morris.....	Engineer with Kinipple.	
	Princess Louise Docks, Quebec and Lévis Graving Dock..	1875-82.
	Esquimaux Graving Dock.....	1879-83.
	See Kinipple & Morris.	
Mortimer, Henry J.....	Assistant of Samuel Hazlewood, District Engineer, Canadian Pacific Railway.	
	Profile and location, Lock—Fort Frances Canal, at foot of Rainy Lake, on the Dawson Route.....	1875.
	Plan of Lock, &c., afterwards modified by G. F. Baillairgé, Assistant Chief Engineer, Public Works.....	1876.
	See Baillairgé, Hazlewood, Sutherland, H. Thompson.	
Mothersill, G. A.....	Chief Engineer's Staff, Head-quarters, Ottawa.....	May, 1873-89.
Murdoch, William....	Collingwood Breakwater, Lake Huron.....	1871.
	Port Arthur, River Kaministiquia, &c., Ontario, harbour works, Resident Engineer, Public Works, Lake Superior.....	15th Oct., 1884-89.
	Previously employed, chiefly on the Canadian Pacific, Pictou and Trenton, Manitoba and South-Western, North-West Central and Hudson Bay, Railways, as Resident, District or Chief Engineer.....	1871 to 1884.
	Member Canadian Society of Civil Engineers.....	20th Jan., 1887.
Nagle, Gerald J.....	First Superintendent, Ottawa River slides and booms.....	1843 to 1846.
	Specification, River Trent slides and booms.....	28th June, 1843.
Nelson, J. M.....	Floods at Montreal, Assistant Harbour Engineer.....	1884.
Nichols, Col., Commanding R. E.....	Rideau Canal route surveyed under his orders by Captain Jebb, R.E.....	1815.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Nish, A. G. ....	Chief Engineer, harbour works of Montreal, and ship channel, River St. Lawrence, from Montreal to Quebec.... Afterwards contractor on Government works at Esquimalt graving dock, British Columbia, &c., up to 1883. .... Died 31st January, 1888.	1864 to 1875. 24th Feb., 1880-83.
Norman, Thomas E. ....	Chats Canal, north side River Ottawa ..... Report on survey of the islands and on the water power of the Chats Rapids, River Ottawa. ....	1853. 1st March, 1858.
Normand, J. B. ....	River St. Maurice, slides, booms, dams, piers. .... Appointed Commissioner to report on causes of floods between Quebec and Montreal. .... Report on causes of floods ..... Acting Superintendent, River St. Maurice, slides and booms	1853-89. 4th Oct., 1873. 21st Feb., 1874. 1875-76.
Odium, Ed. John. ....	Assistant Engineer, Welland Canal enlargement, Southern Division. ....	Nov., 1872-88.
Oldfield, Lieut.-Col. J., Commanding R.E. ....	Report on experiments, blowing in gates at Quebec. ....	11th, 13th July, 1840
Ostell, John. ....	Architect, Surveyor and Engineer. ....	1847-48.
Page, John, sen. ....	Resident Engineer, Welland Canal ..... Assistant Chief Engineer, Welland Canal ..... Resident Engineer, Junction and Williamsburgh Canals. .... Superintending Engineer, canals below Kingston. .... Chief Engineer, Public Works, Provinces of Quebec and Ontario. .... Deputy Commissioner, Public Works, Quebec and Ontario. .... Chief Engineer, Public Works, Canada. .... Welland Canal enlargement, survey commenced. .... Reports on enlargement of canals, Lake Erie to Montreal. .... Report on proposed Baie Verte Canal. .... Special and general report on canals, River St. Lawrence. .... Chief Engineer of canals of Canada. .... Fourth President, Canadian Society of Civil Engineers, proposed for 1890. ....	1842. Sept., 1842. 1850-51. 1852-53. 5th Nov., 1853. 8th March, 1864. 15th March, 1864. 1870. 1872 to 1877. 10th Dec., 1873. 16th Feb., 1880. 1879-90. 1890.
Page, John, jun. ....	Lachine Canal enlargement, Engineering Staff. .... Assistant Engineer, Cornwall Canal ..... Died 14th April, 1885.	April, 1876-79. 1880-85.
Papineau, L. G. ....	Engineering Staff, Public Works, at Montreal, &c. .... do do Chambly Canal, &c. .... do River Richelieu survey, &c. .... Associate member Canadian Society of Civil Engineers. ....	1878-80. 1881-83. 1884-89. 24th Feb., 1887.
Painchaud, Antoine. ....	Resident Engineer, construction of roads between Gaspé Basin and the St. Lawrence. .... President of Corporation of Land Surveyors, P. Q. ....	1858-67. 1884-89.
Parent, E. H. ....	Seigniorial Cadastral Office. .... At headquarters and on surveys, &c. .... Resident Engineer, Grenville Canal. .... Superintending Engineer, Carillon, Grenville, Culbute canals Superintending Engineer, Lachine, Beauharnois, Chambly Canals, St. Ours Lock and Dam, &c. .... Member Canadian Society of Civil Engineers. ....	1856-59. 15th Sept., 1864-71. July, 1872-78. 4th Feb., 1879, to 1st May, 1880. 12th May, 1880-90. 20th Jan., 1887.
Pariseau, L. S. ....	Engineering Staff, Grenville Canal enlargement. .... do River Richelieu survey. .... Associate member Canadian Society of Civil Engineers. ....	1878 to July, 1884. 1885-88. 24th Feb., 1887.
Pearse, B. W. ....	Resident Engineer, Public Works, British Columbia. ....	July 1871 to 1881.
Perley, George E. ....	Engineering Staff, Ottawa. .... Assistant Engineer, Kingston graving dock. ....	2nd June, 1884-88. June, 1888-90.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Perley, H. F. ....	Engineer Staff, Government of New Brunswick .....	Feb., '48, to June, '52
	do do .....	Aug., '56, to Dec., '60
	do Nova Scotia .....	May, '63, to Aug., '65
	Engineer in charge of Government Railways, New Brunswick .....	May, '70, to May, '72
	Engineer in charge, St. Peter's Canal, Cape Breton .....	31st Jan., 1890-99.
	Superintending Engineer, Public Works, Maritime Provinces, Federal Government .....	1st May, 1872.
	Chief Engineer, Public Works, Canada .....	25th Nov., 1890-90.
	Chief Engineer, harbour works, Quebec, graving dock, Lévis .....	Sept., 1863-90.
	Chief Engineer, ship channel, Montreal to Quebec .....	31st Dec., 1888-90.
	Vice President, Canadian Society of Civil Engineers .....	24th June, 1887-89.
	Montreal Flood Commission .....	1886-88.
Perry, Capt. Geo. H. ....	Chate Canal, Ottawa and French River surveys .....	1853-58.
	Resident Engineer, Culbute Canal, Upper Ottawa .....	Sept., 1873-87.
	Died 1888.	
Phillipotts, Lieut.-Col., R. E. ....	Engineer in charge of Cornwall Canal construction .....	1836.
	Reports on inland navigation of Canada .....	31st Dec., 1839, to 3rd Aug., 1840.
	Report on proposed enlargement of Welland Canal .....	1841.
Pilkington, Woodford ...	Resident Engineer, harbour works, Quebec, and graving dock, Lévis .....	1876 to 1883.
	Now employed in India .....	1889.
Piper, Capt., R.E. ....	Commissioner, harbour works, Montreal. ....	1830-32.
Pound, Nicholas ....	Engineering Staff, Public Works, harbour surveys .....	1888.
Power, S. ....	Principal Engineer on Welland Canal .....	1842-45.
	Specification for construction of lock gates, Welland Canal .....	Oct., 1843.
Pritchard .....	Assistant Engineer, Welland Canal .....	1843-44.
Rasslof, Col. de, Russian Engineer .....	Submarine Engineer. Examined River St. Lawrence rapids from Lake Ontario down to foot of Lake St. Louis, at Lachine, with Maillefert .....	1854.
Randall, — .....	Report on Welland Canal, in progress .....	31st May, 1830.
Ranney, G. W. ....	Superintending Engineer, River Trent canals, slides, dams, and booms, from Trenton, Lake Ontario, up to Lake Scugog, inclusive .....	4th May, '55 to July, 1873.
	Member Canadian Society of Civil Engineers .....	20th Jan., 1887.
Read, Capt. J. M. ....	Royal Staff Corps of Engineers, Imperial Government. In charge of Grenville Canal construction .....	1824.
Rheame, L. N. ....	Engineering Staff, Lachine Canal, second enlargement .....	1st Nov., 1877-84.
	Rapide Plat Canal enlargement .....	Dec., 1884.
	do do .....	1st July, 1885-89.
	Member Canadian Society of Civil Engineers .....	20th Jan., 1887.
Richard, J. F. ....	Harbour surveys, Province of Quebec .....	1881-89.
Rigney, James .....	Engineering Staff, roads, Eastern Townships, P.Q. ....	1842.
	Assistant Engineer, River Trent works at Bobcaygeon, &c. Died in California, 6th August, 1863. Interred at London, Ontario.	1843-49.
Ritchie, Thomas .....	Engineering Staff, Maritime Provinces .....	1888.
Roberts, U.S. Eng. ....	Examination of route for projected Welland Canal with Messrs. Hall and Clowes, British engineers .....	1824.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Roberts, U.S. Eng. ....	Canal commenced 30th Nov., 1824. do opened 30th Nov., 1829. Wooden locks 110 by 22; $7\frac{1}{2}$ feet water on sills.	
Robertson, G. E. ....	Engineering Staff, Lachine Canal, second enlargement, Lower or Montreal Division, &c. .... Cornwall Canal enlargement, upper half. .... Member Canadian Society of Civil Engineers. ....	Aug., 1873-85. July, 1885-89. 20th Jan., 1887.
Robinson, Arthur G. ....	Assistant Engineer, Lachine and Chambly Canals. ....	1843-48.
Rogers, R. B. ....	Assistant Engineer, River Trent slides, booms and canals. do Midland Division, Grand Trunk Railway do Survey Trent Valley Canal. .... Superintending Engineer, River Trent slides, booms and locks. .... Bachelor of Applied Sciences and member Canadian Society of Civil Engineers. ....	1878 to 1881. 1881 to 1882. 1882 to 1883. 1st July, 1884-89. 12th May, 1888.
Rosa, Joseph. ....	Engineering Staff, roads, bridges, piers, harbours and river improvements, &c., Province of Quebec. ....	29th May, 1856-89.
Rosamond, Joseph A. ....	Report, River St. Francis, Pierreville Mills. .... Engineering Staff, Lachine Canal enlargement. .... Resident Engineer, Murray Canal, Lake Ontario. .... Member Canadian Society of Civil Engineers. ....	13th July, 1875. June 1876-82. June, 1882, to 1889. 24th Feb., 1887.
Ross, John LeBreton. ....	Engineering Staff, Public Works, Ontario and Quebec. .... Died, May, 1876.	December, 1856-76.
Rowan, James H. ....	Engineering Staff, Public Works, canals and railways. .... Subsequently District Engineer, Canadian Pacific Railway, Manitoba. ....	May, 1860-72. 1872 to 1882.
Roy, Charles F. ....	Harbours, Province of Quebec and Maritime Provinces. .... Ship channel between St. Roch and Ile-aux-Coudres. .... Was elected for the County of Kamouraska as Member of the House of Commons, 1877-78. Died, 13th April, 1882.	1879-80. 1881.
Roy, George P. ....	Engineering Staff, Public Works, harbours, Quebec. ....	1881-82, 1884.
Roy, Joseph R. ....	Engineering Staff, Public Works, river and harbours surveys, Quebec. .... Associate Member of Canadian Society of Civil Engineers. ....	1883-84. 24th Feb., 1887.
Royal Staff Corps, Imperial Government. ....	Cascades, Split Rock, Coteau du Lac, Old Fort. Canals enlarged, locks 12 feet wide, water $3\frac{1}{2}$ feet. .... Ordnance canals, north side River Ottawa, at Carillon, Chute à Blondeau and Grenville. Locks 108 by 20 and $130\frac{1}{2}$ by $32\frac{1}{2}$ , with 6 feet water on sills, designed. .... Completed. ....	1817. 1819. 1833.
Rubidge, F. P. ....	Assistant Chief Engineer, Public Works, and Architect of Canada prior to and after Confederation. .... Report on proposed landing piers below Quebec. .... In charge of surveys and investigations, &c., Lake St. Peter Report on River L'Assomption lock, dam and dredging. .... do bridges, &c., Province of Quebec, &c. .... Plans of bridges constructed across Rivers St. Maurice, Champlain, Ste Anne de la Pérade, Jacques Cartier, on Provincial Highway, north shore of St. Lawrence,— and Rivers Etchemin, Bécancour, Godfroi, Nicolet, Mel- bourne, Chateauguay, &c., on Main Roads, south side of St. Lawrence. .... Projected docks at "Cap Rouge," above Quebec. Survey and report. ....	15th Dec., 1841, to July, 1871. 15th Nov., 1846. 1847. 27th Dec., 1848. 29th Nov., 1848. 1843 to 1849. 1846.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Rubidge F. P. ....	Construction and improvements Parliament buildings and residences of Governors General, &c., at Quebec, Montreal and Toronto ..... Fourteen District Court Houses and Jails constructed in Province of Quebec ..... Commission of Enquiry, Ottawa Parliament and Departmental Buildings ..... Improvements—Governor General's residence, at Rideau Hall, Ottawa ..... Reports on buildings and other works ..... Superannuated ..... Residing in Montreal .....	1844 to 1865. 1859 to 1862. 1862-63. 1865-1871. 1846 to 1871. July, 1871. Dec., 1889.
Rubidge, Thomas S. ...	Engineering Staff, Williamsburgh Canal, construction .... Superintending Engineer, deepening Galops Rapids, work commenced 1876 and completed 1882 ..... Superintending Engineer, Murray Canal, between Bay of Quinté and Presqu'île Bay, north shore Lake Ontario ..... Superintending Engineer, Burleigh Canal, Buckhorn Canal, Fenelon Falls Canal, &c., on the River Trent, works commenced 1882, completed 1888 ..... Superintending Engineer, Williamsburg Canals. Enlargement, &c. .... Superintending Engineer, Cornwall Canal enlargement, &c. Work commenced 1876 on lower half from Cornwall upwards. ....	1844. 1875 to 1882. 1881 to 1886. 1881 to 1888. 1880. 1876-1889.
Russell, Lindsay A. ....	Engineering Staff, Public Works, survey Dawson Route. Fort William on River Kaministiquia near Thunder Bay, Lake Superior, to Fort Garry (Winnipeg), Manitoba .....	1857-1859.
Russell, Alexander J. ....	Superintending Engineer, roads and bridges along north shore Baie des Chaleurs from Cross Point to Gaspé Basin ..... Rimouski bridge contract, S. Bradley, and Jos. Garon. ....	1841 to June, 1846. 23rd Nov., 1844.
Scott, David. ....	Assistant Engineer, Ottawa River slides and booms .....	1st Oct., 1854-89.
Scott, W. L. ....	Assistant Engineer, Montreal Harbour Commissioners .....	19th May, 1875.
Secord, William F. ....	Engineering Staff, S. Division, Welland Canal enlargement .....	Oct., 1872.
Shanly, Frank. ....	Formerly City Engineer of Toronto. Appointed Chief Engineer, Intercolonial Railway ..... Died 13th Sept., 1882.	23rd June, 1880.
Shanly, Robert. ....	Ottawa Canal survey to Lake Huron .....	1857-58.
Shanly, Walter. ....	Superintending Engineer, Beauharnois Canal construction. Chief Engineer Bytown and Prescott Railway ..... Proposed ship canals, River Ottawa, Montreal to Lake Huron ..... Inspector of railways and engineer on various works ..... Elected Member of the House of Commons, 1863-72, July, 1885-90. Member Canadian Society of Civil Engineers .....	1842-48. 1851-54. 1857-58. 29th Oct., 1864-89. 24th Feb., 1887.
Shaw, W. M. ....	Specifications, &c., Hamilton and Port Dover Road, London and Brantford, Brantford and Woodstock .....	1842-44.
Simmons, Lieut. J. A., Royal Engineer. ....	Report of an experiment made at Quebec, 13th July, 1840, to destroy a barrier gate by gunpowder .....	17th July, 1840.
Sims, A. H. ....	Reports on roads, &c., District of Gaspé .....	1847-48
Simpson, Frank. ....	Engineering Staff, Welland Canal, N. Division .....	1876.



## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Sippell, John G. ....	Superintending Engineer, canals, Province of Quebec, excepting Ottawa ordnance canals, until 1857. .... Superintending Engineer, Lachine and Ottawa canals enlargement. .... Consulting Engineer, Lachine and Ottawa canals. .... Died, 28th September, 1879.	July, 1853 to 1877. 1870 to 1877. 1877-79.
Sirois, Joseph Eustache. .	Engineering Staff, harbour works, below Quebec and straightening of ship channel between Quebec and Ile-aux-Coudres. ....	1881-89.
Slater, James Dyson ....	Welland Canal, Assistant Engineer. .... Assistant Engineer on the Ottawa River slides and booms. .... Engineer on macadamized roads, Ottawa to Aylmer and Bell's Corners. .... Resident Engineer, location and construction of Bytown and Prescott Railway, under Walter Shanly, Chief Engineer. .... Montreal, Bytown and Pembroke railway surveys. .... Ottawa ship canal survey, with James Stewart, C.E., &c., Robert Shanly, G. H. Perry, T. E. Norman and Mackenzie. .... Superintending Engineer, Rideau Canal, &c. .... Resigned on 12th September, 1872. Died, 26th October, 1876.	1842-46. 1846 to 1849. 1849-51. 1851-54. 1854-56. 1857-58. 10th June, 1858, to 1st Oct., 1872.
Smith, D. C. ....	Superintendent of light-houses above Montreal. .... Died, 1st May, 1880.	21st June, 1855-80.
Smith, Col. J. C., R.E. .	Joint report and estimate of proposed Rideau Canal works, together with Lieut.-Col. Sir G. Hoste and Major Harris, R.E., recommending locks 108 by 20 feet with a depth of 5 feet water. ....	1825.
Snow, W. B. ....	Engineering Staff, Public Works, Ottawa. .... Harbour surveys, Ontario, Quebec and Maritime Provinces. .... Previously employed chiefly on railways and other important works in England where he acted as agent to the Bishop of Durham, after which he was employed in Africa. .... On various works in Canada. ....	1st Aug., 1880-89. 1882 to 1887. 1837 to 1876. 1876 to 1880.
Soare W. F. ....	Engineering Staff, Public Works, harbours, Ontario. .... Died at Port Stanley, 1889.	1885.
Spence, J. B. ....	Engineering Staff, Railways and Canals, Ottawa, &c. ....	Oct., 1876-89.
Starke, David. ....	Secretary Commission of Enquiry, Ottawa Parliament Buildings. .... Report on supplementary survey, Baie Verte Canal. .... Superintending Engineer, River Ottawa canals. .... do River Trent, new works, completion. ....	1862-63. 27th Dec., 1872. 1st May, 1880-89. April, 1887-88.
St. George, Percival W. .	On Flood Commission, Montreal. .... Engineer and road surveyor, Corporation of Montreal. .... Member of Council, Canadian Society of Civil Engineers. .	1886-88. 1889 and previously. 1887-1890.
St. Laurent, Arthur. ....	Engineering Staff, Public Works, harbour surveys, Province of Quebec. ....	1885-89.
Steckel, Louis Joseph René. ....	Assistant Engineer of G. F. Baillairgé on survey of south shore St. Lawrence, Gulf Road, Ste. Anne des Monts to Cape Rosiers and Gaspé Basin. .... Engineering Staff, Public Works, Ontario and Quebec. .... Survey and borings, Princess Louise Basins, Quebec. .... Engineering Staff, Chief Clerk, Canada. .... Hydrographic survey and Geodetic levels, Rivers St. Lawrence and Richelieu. .... Member Canadian Society of Civil Engineers. ....	Jan., 1861-62. April, 1863-74. 1875-76. 1st July, 1880. July, 1881-89. 9th Feb., 1888.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Stevenson, Alexander ...	Survey with André Trudeau for projected canal between Lakes St. Francis and St. Louis ..... Report on projected Beauharnois Canal by A. Stevenson and N. H. Baird ..... Adopted on recommendation of Samuel Keefer in his report, 17th February, 1842.	1830-31. 1835.
Stewart, James .....	Engineering Staff, Public Works, &c., on various works... Map of ice shoves at Montreal, St. Ours Lock, Beauharnois Canal ..... Road proposed from Malbaie to Ha! Ha! Bay, Saguenay.. Survey and plans, proposed piers below Quebec ..... First General Report on Public Works up to ..... Beauharnois and Lachine Canals surveys and new works ..... On Grand Trunk Railway ..... Ottawa and Lake Huron proposed ship canal survey ..... See Walter Shanly's Report, 22nd March, 1858.	1843 to 1858. 1843-44-45. 1847. 1846-47. 1849. 1847-54. 1854-55-56. 1857-58.
Stoker, George .....	Assistant Engineer, Welland Canal .....	1864.
Strong, W. O. ....	Engineer in charge, under H. F. Perley, Chief Engineer of Public Works, of Graving or Dry Dock at Kingston, Lake Ontario ..... Plans and specification of dock, signed by H. F. Perley, Chief Engineer of Public Works..... Length of dock, 280 feet. Width of dock, 72 feet at coping level. Entrance width of dock, 48 feet. Depth at entrance of dock, 15½ feet below the low water of Lake Ontario. Height of water varies 5½ feet. Contract signed by N. K. and M. K. Connolly and commenced ..... Date of completion stipulated ..... Estimated cost, \$260,680.75.	1st Dec., 1888-90. 14th Feb., 1889.      23rd April, 1889. 23rd April, 1891.
Sullivan, J. H. ....	Engineering Staff, Public Works, improvement of rivers, &c. Resident Engineer, deepening feeder, Lake St. Francis to River St. Louis. .... River Assiniboine improvement.....	1880-87. 1883-85. 1886.
Summerville, Peter.....	Assistant Engineer, Public Works, surveys Victoria Harbour and Fraser River, British Columbia..... Member Canadian Society of Civil Engineers.....	1st Aug., 1783, to 6th July, 1887. 9th Feb., 1888.
Sutcliffe, John .....	Engineering Staff, Lachine Canal enlargement..... do Ste. Anne Canal..... St. Gabriel Basins, Lachine Canal..... Left service, May, 1886. Member Canadian Society of Civil Engineers.....	15th July, 1872-81. July, 1881-86. Aug., 1882-86. 27th June, 1888.
Sutherland, Hugh.....	Superintending Engineer, Fort Frances Canal, at foot of Rainy Lake, on the Dawson route..... Canal, 800 feet long, with a lock 200 by 36½ feet, and 7 feet depth of water on lower sill during low water, opening navigation from Kettle Falls, at Head of Rainy Lake, to N.-W. angle of Lake of the Woods, 164 miles. Work commenced ..... do completed, except lock gates..... Cost of construction, \$288,278.51, to ..... See Baillairgé, Hazlewood, Mortimer, H. Thompson.	1875-79.   14th June, 1875. 1878. 22nd Jan., 1879.
Swift, W. H. (from Boston, U.S.) .....	Consulting Engineer, Caughnawaga Canal, recommends route proposed by J. B. Mills, 19th February, 1848....	6th June, 1855.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Symmes, H. R.....	Superintending Engineer, River St. Maurice, slides and booms, &c..... Died 8th October, 1875.	24th Feb., 1858 to 8th Oct., 1875.
Taché, Joseph Charles..	Engineering Staff at Head-quarters..... Chief Draughtsman..... Harbour works, &c., below Quebec, surveys and construction.....	29th Jan., 1872. 1st July, 1883. 1882 to 1889.
Tait, Charles Maitland..	Employed on survey of Beauharnois Canal.....	1842.
Tait, T. M.....	Engineer of harbour works, Montreal.....	1845 to 1848.
Talcott, W. H.....	Survey, report and estimates, St. Peter's Canal.....	1856.
Taylor, David.....	Survey of canal route, Lake Huron to Ottawa River..... Reported thereon together with David Thompson and William Hawkins, to the Hon. John Macaulay, Surveyor General of Upper Canada, John S. Cartwright and Capt. Baddeley, Royal Engineers, according to an Act of the Parliament of Upper Canada, of 4th March, 1837. <i>See App. 30, pp. 837 to 847, by G. F. B., Public Works Report, 1867-82.</i>	1837.
Telford, Thomas.....	Report on projected Baie Verte Canal between Bay of Fundy and Gulf of St. Lawrence.....	1826.
Temple, E. B.....	Resident Engineer, Toronto Harbour works.....	April, 1888.
Thom, G., Brevet Brigadier General, U.S.A..	Report on saw-dust obstruction in navigable rivers.....	27th Aug., 1872.
Thompson, David.....	Astronomer and Surveyor, engaged in surveying and defining boundary line, for Great Britain, between Canada and the United States..... In the report of the British and United States Commissioners appointed to trace the line of boundary under Art. VII of the Treaty of Ghent, dated 23rd Oct., 1826, Mr. Thompson is spoken of as principal surveyor to the Board and as signing in that capacity the 34 maps prepared. <i>See Hertlet's Commercial Treaties, vol. 13, page 906.</i> On the River St. Lawrence..... Survey of Lake of the Woods..... Survey of Lake St. Francis, &c..... Survey of canal route, Lake Huron to Ottawa River..... Survey of Lake St. Peter channel and estimate of proposed dredging for ship channel.....	1816 to 1827. 1817. 1825. 1832-34. 1837. 1841.
Thompson, E. W.....	Assistant Engineer, Carillon Canal, new locks and dam...	July, 1872.
Thompson, H.....	Assistant Engineer of Hugh Sutherland, Fort Frances Canal, at the foot of Rainy Lake..... <i>See Baillairgé, Hazlewood, Mortimer, Sutherland.</i>	1875-79.
Thompson, H. B.....	Lachine Canal enlargement..... Assistant Resident Engineer, Culbute Canal, Upper Ottawa	Dec., 1872. Sept., 1873.
Thompson, H. G.....	Reports on surveys and maps, with soundings of River St. Lawrence above Lake St. Louis.....	Sept. & Dec., 1836-42.
Thompson, Lieut.-Col...	Royal Engineer under the Imperial Government. Succeeded Major Bolton, R.E., as Superintending Engineer of the Rideau Canal.	

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Thompson, W. G. McNeill.....	Mechanics Institute, Civil Engineers, England. Resident Engineer, Southern Division, Welland Canal enlargement ..... Assistant Engineer, Saut St. Marie Canal, Canada ..... Entered the service of the Dominion Government in April, 1868, as Division Engineer on surveys and location of the Intercolonial Railway, and served in Nova Scotia, New Brunswick and Quebec Provinces until the spring of 1872. In charge of the survey of Lake St. Louis ..... Adolphe Larue, P.L.S., surveyed Lake St. Louis, 1836.	1872-88. Jan., 1889. Spring, 1872.
Tibbett, Hiram.....	Description of a projected route for the Welland Canal.....	1823.
Tomlinson, Joseph.....	Engineering Staff, Public Works, Canada..... Superintending Engineer, light-houses, Canada..... Inspector of bridges on railways, &c..... Superannuated.....	1st Jan., 1870. 5th May, 1871-80. 9th Feb., 1880-86. 16th Oct., 1886.
Townsend, T. B.....	Engineering Staff of Chief Engineer, Public Works, Ottawa Contractor for lock gates, Welland Canal enlargement.....	Sept., 1872-80. 17th July, 1880, to 29th July, 1882.
Tracy, B. H.....	Survey of projected Caughnawaga Canal route, from Lake St. Louis to Lake Champlain..... See Mills, Jarvis, Gamble, Swift.	1854.
Tremblay, A. J.....	Engineering Staff, harbour surveys below Quebec..... Student Canadian Society of Civil Engineers.....	1888. 20th Jan., 1887.
Trudeau, André.....	Survey with Alex. Stevenson in connection with improvements of water communication between Lakes St. Francis and St. Louis.....	1830-31.
Trudeau, Louis E.....	Engineering Staff, harbour surveys, &c..... do canals, &c., Province of Quebec.....	July, 1875-80. 1880-89.
Trudeau, Toussaint.....	Assistant Engineer on railways, &c., Canada and United States..... Appointed Secretary of Public Works, Ontario and Quebec. Chief Engineer, Public Works..... Assistant Commissioner, Public Works, Ontario and Quebec Deputy Minister Public Works, Canada..... do Railways and Canals, Canada.....	1846 to 1859. 13th Dec., 1859-64. 8th March, 1864. 15th March, 1864. May, 1868-79. 22nd Sept., 1879-90.
Trutch, Sir J. W., C.M.G.	In charge of Public Works, including Esquimalt Graving Dock, British Columbia..... Previously Lieut.-Governor of British Columbia. Member Canadian Society of Civil Engineers.....	1881 to Jan., 1888. 17th Sept., 1887.
Tully, Kivas.....	Engineer, Toronto Harbour Commissioners..... Proposed Georgian Bay Canal, Lake Ontario to Lake Huron.	1853-88. 1845-51.
Twiss, Capt.....	Commanding Officer of the Royal Engineers. The first canals on the north side of the St. Lawrence, between Lakes St. Louis and St. Francis, were constructed under this engineer, as designed by Governor Haldimand, between the years..... They were located at the Cascades, Split Rock, Trou du Moulin and Côteau du Lac, the locks being from 6 to 7 feet in width between the gates with a depth of 2 to 2½ feet of water on the sills, for the passage of small boats, with from 39 to 40 barrels of flour. 263 bateaux, at 10s., 2 canoes and 1 boat, at 5s. each = £132 5 0, for tolls, passed through the	1779 and 1783.

## ENGINEERS Employed on Public Works, Canada—Continued.

Engineers.	Works.	Dates of Employment, &c.
Twiss, Capt. ....	then existing canals, during the season of 1781. <i>See</i> his report dated ..... For further details subsequent to the above <i>see</i> record of Col. Gother Mann, R.E.	3rd Dec., 1781.
Valiquette, Ulric. ....	Engineering Staff, Public Works, Ottawa and below Quebec	May, 1880-89.
Vaughan, Captain ....	Superintendent of dredging, new straight channel, Lake St. Peter ..... In charge of light-house at Belle-Ile. .... Died at Quebec, 9th Dec., 1869.	1844-46. 1855-61.
Walton, D. S. ....	Engineering Staff, Lachine Canal enlargement, St. Ours Lock and dam, Chambly Canal, roads, bridges, &c., Hull to Grenville, Bytown to l'Orignal, &c. ....	1843-49.
Weller, J. L. ....	Engineering Staff, New Trent Canals ..... do Cornwall Canal enlargement, lower half	July, 1882-89. Aug., 1888-89.
Wells, Alexander W. ....	Engineering Staff survey, proposed Dawson Route, from Fort William, on the River Kaministiquia, Thunder Bay, Lake Superior, to Fort Garry or Winnipeg, Manitoba.	1857 to 1859.
Wells, Arthur ....	Engineering Staff, Public Works, Ontario and Quebec, roads, Eastern Townships, and Lachine Canal enlarge- ment, &c. ....	1846.
West, James ....	Specification, bridge across westerley channel of the River Rideau, near its mouth ..... Proposed Georgian Bay, Lake Huron and Ottawa Canal..	5th July, 1845. 23rd Feb., 1856.
Westmacott, Lieut. S., R.E. ....	Report on causes of floods at Montreal. ....	29th June, 1841.
White, Lieut. H. A., R.E.	Report on experiment made at Quebec to destroy Sally Port gates with gunpowder. ....	11th July, 1840.
Williams, J. B. ....	Engineering Staff, Public Works, River Saskatchewan improvement, &c., N.W.T. ....	1885-87.
Wise, Frederick Ashford Milbank ....	Engineering Staff, survey of route for proposed Saut-Ste- Marie Canal, under S. Keefer, Chief Engineer of Public Works, Canada ..... On Engineering Staff, Grand Trunk Railway, construction and maintenance ..... On Engineering Staff, Public Works, surveys, harbours, &c., Ontario ..... Resident Engineer, on the construction of the Erie and Niagara Railway, and the Buffalo and Salamanca Branch of the Atlantic and Great Western Railway... Chief Engineer of the St. Lawrence and Ottawa Railway, and Assistant Engineer of the Ottawa Water Works.. Superintending Engineer, Rideau Canal, Ottawa to Kings- ton..... Superintending Engineer of the reconstruction of the Tay Canal, from Rideau Lake to the Town of Perth, Ontario Old canal $\frac{3}{4}$ miles long, with 5 locks of $100 \times 20 \times$ 4 feet depth of water on sills. Total rise, 28 feet. Built 1831-34, by a private company, under Act William IV, Chap. 2, Sec. 1, and other acts ..... New canal 7 miles long, with 2 locks, each of 13 feet lift, and $134 \times 32$ with $5\frac{1}{2}$ feet depth of water on sills during low water of river and lakes. Built by Manning & Co., contractors.. And by W. Davis & Co., Contractors..... New canal to be opened. ....	1852. 1853 to 1860. 1860-63. 1864-66. 1866-72. 1872-90. 1882-89. 1831. 15th June, 1883 to 12th July, 1888. 12th July, 1888-90. 30th June, 1890.

ENGINEERS Employed on Public Works, Canada—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Wise, Frederick Ashford Milbank.....	Mr. Wise became a member of Canadian Society of Civil Engineers.....	20th Jan., 1887.
Wolfe, Major Alex. Jos..	Superintending Engineer, Kempt Road, from St. Octave de Métis, near the River St. Lawrence, to Cross Point, Baie des Chaleurs.....	1830-32.
Wright, Benjamin .....	Projected Welland Canal enlargement.....	1833.
	do Williamsburgh Canals .....	1833.
	Consulting Engineer, Cornwall Canal.....	1833.
Wright, G. B.....	Fraser River improvements, British Columbia, report.....	1875-80.
Yule, Capt. P., R.E....	Superintendent, construction and repairs of St. Lawrence Canals.....	1830.
	Report on St. Lawrence Canals.....	1833.
	Plans, canal and lock proposed at Ste. Anne, south side River Ottawa, instead of old lock, built 1816, in Vaudreuil channel between Ile Perrot and Vaudreuil, of wood.....	1885.
	New stone lock, north side of river, 190 by 45 feet, with 6 feet water on sills, built 1840-43.	
	Enlarged stone lock 200 × 45 with 9 feet water on sills and a new channel with crib work and embankment on each side, in the river below the lock, commenced in 1873 and completed towards 1883.	

N.B.—See notes on title page and the Addenda which follow on next page.—G.F.B.

ADDENDA to "Engineers Employed on Public Works, Canada."—*Continued.*

Engineers.	Works.	Dates of Employment, &c.
Almoy, J. ....	Report on Sault Ste. Marie Canal to Legislature, State of Michigan previous to..... See Report of Hon. H. H. Killaly.....	1847. 30th March, 1847.
Pailey, C.E. ....	From Kingston, Ontario, Provincial Engineer, P.E.I..... Died 1882. No successor appointed.	1877 to 1882.
Beckwith, Adolphus G..	Provincial Engineer, N.B. .... Succeeded Walter M. Buck who died.	Dates not ascertained.
Ford, Capt., R.E. ....	Superintendent of Works, Grenville Canal. ....	1846.
Gordon, Lieut., R.E. ....	Engineering Staff, Grenville Canal. ....	1844.
Gregory, Charles Currie, C.E. ....	Assistant Engineer, Sarnia Branch Great Western Railway do European & North Western—now Intercolonial Railway—Upper Salisbury Division.. .. Engineer, City of Fredericton, N.B. .... European & North American Railway. In charge Eastern Division .....	1857-59. 1859 to 1861. 1862 to 1867. 1867 to 1869.
	Preliminary location, Carleton Branch Railway .....	1870.
	Chief Engineer, construction Prince Edward Island Railway .....	1871 to 1875.
	Engineer in charge alternative surveys North Shore Railway, Quebec.....	1876.
	Chief Engineer Eastern Extension, Nova Scotia .....	1876 to 1878
	Arbitrator in case—Canadian Pacific Ry. vs. The Queen... ..	1889-90.
Hadden, Lieut., R.E....	Engineering Staff, Grenville Canal.....	1834.
Hayes, Capt., Royal Staff Corps.....	Engineering Staff, Grenville Canal.....	1834.
Howorth, Lieut., R.E....	Engineering Staff, Grenville Canal.....	1836.
Murphy, Martin .....	Provincial Engineer, Nova Scotia, Superintending Engineer of all works of a provincial nature in that Province....	1867-1890.
Hendel, J. M., C.E. ....	"A Civil Engineer of considerable eminence." Consulting Engineer with Hon. H. H. Killaly, Capt. Bayfield and Capt. Beaufort, on the Lake St. Peter navigation project.—See Killaly's Report.....	1843-44.
Smythe, Major General J. Carmichael.....	Reported to the Board of Ordnance adverse to Col. By's "enlarged views" touching the construction of projected canals. Col. By wrote to General Mann, 13th July, 1826, recommending that for commercial and military purposes, it was expedient to construct the canals of sufficient size to admit the passage of steamers 110 to 130 feet in length, 40 to 50 feet wide, and drawing 8 feet of water. The following were the canals referred to by Col. By and his estimate of their cost, viz. :— Welland Canal, £400,000 ; Rideau, £400,000 ; Grenville, £100,000 ; north side Island of Montreal, £150,000 ; Richelieu, £150,000. In deference to Major General Smyth's Report, the canals were ordered to be constructed on the limited dimensions first determined on. See Mr. Douglas Brynner, Archivist's Report, 1889.	
Stehelin, Capt., R.E....	General Superintending Engineer construction Grenville Canal, between.....	1819 and 1833.
Taylor, Thomas Dixon, R.E. ....	Assistant Engineer, construction Intercolonial Railway... Surveys and construction Canadian Pacific Railway..... also part of.....	May, '69, to Dec., '74. Feb., '75, to Sept., '77. 1878-79 and '80.

ADDENDA to "Engineers employed on Public Works, Canada."—*Concluded.*

Engineers.	Works.	Dates of Employment, &c.
Taylor, Thomas Dixon, R.E. ....	Railway survey, Newfoundland..... Resident Engineer Tay Canal.....	July to Dec., 1880. March, 1882, to Jan., 1889.
Vavasour, Lieut., R.E..	Engineering Staff, Grenville Canal..	1840.
Walsh, Edmund J. ....	Assistant Engineer, Municipality and County Works, Province of Ontario .....	1877-1880.
	Assistant Engineer, C.P.R., Rocky Mountain Division....	1881.
	do Northern Pacific Railway & O. T. Co. ....	1882.
	Assistant and Division Engineer, C. P. Railway.....	1882-1885.
	Assistant Engineer, Cape Breton Railway—for Department of Railways and Canals.....	1885 to 1889.
	Engineer in charge of Division on Harvey and Salisbury Location Surveys—for Department of Railways and Canals.....	1889-1890.
White, Lieut., R.E. ....	Engineering Staff, Grenville Canal.....	1844,



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APPENDIX No. 20.

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# OFFICIAL CORRESPONDENCE

From 1st July, 1867, to 30th June, 1889.

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## APPENDIX No. 20.

## OFFICIAL CORRESPONDENCE.

LETTERS Received and Sent from 1st July, 1867, to 30th June, 1889.

Years.				Received.	Sent.
1867—	From 1st July to 31st December.....			2,075	1,511
1868	do 1st January to 31st December.....			3,498	2,317
1869	do do do .....			3,448	2,171
1870	do do do .....			4,961	3,185
1871	do do do .....			6,268	3,983
1872	do do do .....			8,333	4,428
1873	do do do .....			10,072	5,707
1874	do do do .....			9,800	5,043
1875	do do do .....			9,006	5,006
1876	do do do .....			7,971	4,773
1877	do do do .....			7,517	4,425
1878	do do do .....			6,886	4,021
1879	do do to 6th October .....			7,186	4,547
1879	do 7th October to 31st December .....			2,033	810
1880	do 1st January do .....			8,451	4,410
1881	do do do .....			9,509	5,529
1882	do do do .....			10,505	5,699
1883	do do do .....			11,633	6,227
1884	do do do .....			13,114	6,903
1885	do do do .....			8,977	5,321
1886	do do do .....			9,644	5,352
1887	do do to 30th June .....			4,866	2,735
1887	do 1st July do 1888 .....			10,493	6,343
1888	do do do 1889 .....			10,522	7,042

NUMBER of Cheques sent by Accountant's to Secretary's Branch and Mailed, from 1882 to 1889.

Year.		Nc.
1882.....	From 22nd September to 30th June, 1883 .....	1,566
1883.....	do 1st July do 1884 .....	3,366
1884.....	do do do 1885 .....	3,298
1885.....	do do do 1886 .....	3,466
1886.....	do do do 1887 .....	4,198
1887.....	do do do 1888 .....	4,692
1888.....	do do do 1889 .....	4,960

**CHEQUES issued by Finance Department and Mailed from Secretary's Branch.**

Year.		No.
1885.....	From 1st April to 30th June, 1885.....	245
1885.....	do 1st July do 1886.....	954
1886.....	do do do 1887.....	1,158
1887.....	do do do 1888.....	918
1888.....	do do do 1889.....	887

**LETTERS Received and Sent, Chief Architect's Office, from 1st January, 1880, to 30th June, 1889.**

Years.	Received.	Sent.
1880—From 1st January to 30th June.....		1,273
1880 do 1st July do 1881.....		2,943
1881 do do do 1882.....		2,859
1882 do do do 1883.....	3,538	4,600
1883 do do do 1884.....	3,860	6,004
1884 do do do 1885.....	4,500	6,718
1885 do do do 1886.....	6,075	6,450
1886 do do do 1887.....	6,816	6,380
1887 do do do 1888.....	6,947	6,870
1888 do do do 1889.....	6,484	7,667

**LETTERS sent from Chief Engineer's Office from 10th January, 1880, to 30th June, 1889.**

Year.		No.
1880.....	From 10th January to 30th June.....	418
1880.....	do 1st July do 1881.....	1,795
1881.....	do do do 1882.....	2,352
1882.....	do do do 1883.....	2,651
1883.....	do do do 1884.....	3,611
1884.....	do do do 1885.....	3,119
1885.....	do do do 1886.....	2,867
1886.....	do do do 1887.....	3,281
1887.....	do do do 1888.....	3,552
1888.....	do do do 1889.....	4,229

NOTE.—The letters, including returns, received in the Chief Engineer's Office may be estimated at the rate of two received to one sent.

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APPENDIX No. 21.

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STATEMENT

OF

SLIDE AND BOOM DUES.

OTTAWA DISTRICT.

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STATEMENT of Slide and Boom Dues outstanding at Ottawa on 30th June, 1889, remaining uncollected on the 30th September, 1889, and Amounts since collected to the 30th November, 1889, inclusive.

REFERENCE No. 103,990.

By Whom Due.	Bad and Doubtful Debts.	Chaudière Boomage in — — — See note 4	Other Slide and Boom Dues.	Ordinary Slide and Boom Dues.	Total Dues outstanding on 30th Sept., 1889.	Year to which Dues belong.	Amounts since collected to 30th Nov., 1889, inclusive.	Remarks.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.		\$ cts.	
John & Wm. McLean.....	53 14				53 14	1873		Insolvent.
James Yuill.....	9 29				9 29	1876		Overcharge.
John Rowan.....	342 50				342 50	1872 and 1873		Insolvent.
Lemieux & Charette.....	21 30				21 30	1873		do
Tailleur & Lapierre.....	148 10				148 10	1873 and 1874		do
McGroove & McHarry.....	261 42				261 42	1873 and 1874		do
W. C. Wells.....	600 90				600 90	1873 and 1874		do
Dufresne & McGarity.....	528 80				528 80	1874 and 1875		do
Walton Smith.....	171 46				171 46	1874 and 1875		do
A. H. Baldwin.....	3,507 92				3,507 62	1871 to 1874		do
						1861-'63, '64.		
Hon. James Skead.....	9,807 65				9,807 65	1869, 1875 to 1878		do
Batson & Currier.....	5,558 70				5,558 70	1875 to 1877		do
A. F. A. Knight.....	546 30				546 30	1878		do
James Walker.....	11 25				11 25	1877		do
R. Campbell & Son.....	283 50				1,558 50	1879 to 1881		do
W. C. Edwards & Co.....					2,502 55	1886 and 1888		\$480.37 is an overcharge.
John R. Booth.....					2,022 18	1881 to 1888	2,022 18	\$398.88 counter claim damage by breaking of Cou-longe boom.
					10,270 81			\$2,035.96 counter claim damage by Madawaska boom breaking.
Perley & Pattee.....					11,344 91	1867 and 1868		\$419.10 counter claim damage by breaking of Cou-longe boom.
The Bronsons & Weston Lum-ber Co.....					8,180 79	1881 to 1885		
Pierce & Co.....	462 18				462 18	1888		
G. A. Grier & Co.....	1,060 59				1,060 59	1886 and 1887		
Estate late Levi Young	1,461 20				1,461 20	1881 to 1885		
W. Mason.....	413 85				1,511 66	1881 to 1888	1,067 81	
Gilmour & Co.....	406 27				406 27	1884		
John Rochester.....	258 88				268 88	1881 to 1883		Overcharge.
J. & B. Grier.....					76 84	1873		do
R. & W. Conroy.....					96 42	1882 and 1883		reported in Return S 38 for March, 1889.

McLachlin Bros.....	2,102 46	2,102 46	1887 and 1888	Madawaska boomage, claim boom is no use to them.
A. & P. White.....	101 00	101 00	1881	Overcharge.
J. & G. Bryson.....	252 20	252 20	1886	Counter claim for damage by breaking of Coulouge boom.
B. Caldwell & Son.....	4 33	4 33	1887	Overcharge.
E. B. Eddy.....	458 25	458 25	1886	Payments delayed by dispute between Mr. Eddy and Alex. Fraser as to which of them should pay.
The E. B. Eddy Manuf. Co.....			1887	80 cents disputed, never received the logs.
James G. Bryson.....		124 78	1887	Insolvent.
Costello Brothers.....		73 50	1886	do
James Dempster.....		90 62	1882	
N. E. Cormier.....		231 98	1883 to 1888	
R. Hurdman & Co.....		2,528 34	1883 to 1888	
Joseph Johnson.....		5,461 17	1887 and 1888	
John R. Booth.....		76 13	1888	
		280 00	1889	
Total.....	21,852 23	7,241 06		7,075 41

NOTE A.—*Chaudière Boomage*.—This is a charge of  $\frac{1}{4}$  of a cent on sawlogs for Chaudière Boom since 1881 under O.C. 19th June, 1880. The mill owners claim that the one-third of a cent which they pay for the Cheneaux Boom includes the charge for Chaudière Boom under the settlement made in 1880. Collection of these dues deferred by order of Minister Inland Revenue of 5th May, 1882.

## RECAPITULATION.

Bad and Doubtful Debts.....	\$21,852 23
Chaudière Boomage in Suspense.....	31,005 54
Other Slide and Boom dues disputed.....	7,241 56
Ordinary dues of 1882 to 1888.....	\$12,164 76
do 1889.....	280 00

OTTAWA, 30th November, 1889.

## NOTE.

Ordinary dues outstanding on 30th September, 1889.....	\$12,444 76
Of which collected to 30th November, 1889.....	7,075 41
Ordinary dues uncollected 30th November, 1889.....	\$5,369 35
Other dues as above.....	60,099 33
Outstanding 30th November, 1889.....	\$65,468 68

EDWARD T. SMITH,

Collector of Slide and Boom Dues.















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taken from the Building

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